1514 Taylor Way Development

# Interim Action Completion Report

**Prepared for**

Avenue 55, LLC
600 University Street, Suite 2305
Seattle, WA 98101

**May 2019**

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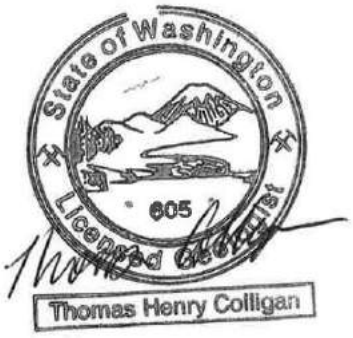
# Interim Action Completion Report
# 1514 Taylor Way Development, Tacoma, Washington

This document was prepared for
Avenue 55 and the Port of Tacoma
under the supervision of:




Name: Thomas H. Colligan, LHG
Date: 5/23/2019

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## List of Acronyms and Abbreviations

| Acronym/ Abbreviation | Definition |
|---|---|
| AO | Agreed Order |
| Avenue 55 | Avenue 55, LLC |
| COC | Contaminant of concern |
| CSWGP | Construction Stormwater General Permit |
| DRO | Diesel-range organic |
| Ecology | Washington State Department of Ecology |
| FS | Feasibility Study |
| GRO | Gasoline-range organic |
| IA | Interim Action |
| mg/kg | Milligrams per kilogram |
| MTCA | Model Toxics Control Act |
| ORO | Oil-range organic |
| PAH | Polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated biphenyl |
| PCP | Pentachlorophenol |
| Port | Port of Tacoma |
| Prologis | Prologis Inc. |
| RI | Remedial Investigation |
| SSL | Soil screening level |
| SVOC | Semivolatile organic compound |
| TPH | Total petroleum hydrocarbons |
| TWAAFA | Taylor Way and Alexander Avenue Fill Area |

| Acronym/ Abbreviation | Definition |
|---|---|
| VI | Vapor intrusion |
| VOC | Volatile organic compound |

# 1.0 Introduction

This document describes the completion of Interim Action cleanup activities that occurred at 1514 Taylor Way in Tacoma, Washington (Figure 1.1). The developer of the property, Avenue 55, LLC (Avenue 55), entered into an agreement with the Port of Tacoma (Port), the land owner, in 2016 to lease and develop this 10-acre property with two warehouse/distribution centers totaling 203,580 square feet with construction beginning in the summer of 2018. In addition, the agreement required Avenue 55 to be the performing party for implementing the scope of work requirements of Agreed Order (AO) DE13921 and the associated Interim Action Work Plan (Floyd|Snider 2017) between the Port and the Washington State Department of Ecology (Ecology) implementing an Interim Action (IA) cleanup at this property.

The IA that was performed is described in this report. The work performed is the culmination of work begun in 2006 by Prologis Inc. (Prologis), the landowner at that time. Prologis undertook a Remedial Investigation (RI) and Feasibility Study (FS) for the property in accordance with a prior AO with Ecology. The RI/FS defined the nature and extent of contamination related to the fill history at the property and identified a preferred remedy. Ecology concurred that the RI/FS was satisfactory, and the AO was subsequently closed out. Subsequent to the close out of the AO, Prologis sold the property to the Port. Following this, Ecology decided that the 1514 Taylor Way property was part of a larger "Site" defined by presence of a variety of industrial fill types in the general area. This larger Site has been termed the "Taylor Way and Alexander Avenue Fill Area" (TWAAFA) Site and includes the 1514 Taylor Way property, the former CleanCare property, the Philip Services Corporation Hazardous Waste Facility (now Stericycle), the Hylebos Marsh (1212 Taylor Way and 1229 Alexander Avenue properties), and the Potter property (refer to Figure 1.2).

Even though the work described in this report is identical to the preferred final remedy described in the 2006 FS (Floyd|Snider 2006), it was performed administratively as an interim cleanup action, given that this property is now part of the larger TWAAFA Site undergoing an RI/FS under a separate Ecology AO. It is expected that the final cleanup action for the TWAAFA Site will include no substantive actions at the 1514 Taylor Way property other than the replacement of groundwater monitoring wells.

# 2.0 Site Conditions

A brief summary of pre-construction soil and groundwater conditions as taken from the 2006 RI report is as follows.

## 2.1 SOIL

The following surface fill types were noted during the RI:

- **Dredge fill consisting of sand, sandy silt, and silty sand.** Dredge soils are characterized by the presence of shell fragments, which were observed in multiple test pits.
- **Recent construction fill consisting of sandy gravel.** Construction fill was likely used to fill to grade certain parts of the property prior to construction and in places is underlain by a geotextile fabric. A large surcharge pile of fill soil was present along the western property boundary.
- **Debris found intermixed or in between soil-rich layers consisting of concrete rubble, waste lumber, glass, metal or brick fragments, plastic, etc.** The debris was probably generated during general property regrading and possibly past demolition of the pre-existing buildings.
- **Wood wastes (e.g., wood chips, sawdust, crushed or chipped lumber), such as those associated with log sort yards or wood-manufacturing facilities.** Several test pits contained appreciable thickness of wood waste.
- **Paste-like white semi-solid material.** A paste-like white semi-solid material was found at an RI test pit TP-4 just under the ground surface and occurring within an approximately 10,000-square-foot semi-circular area extending to the property line with the former CleanCare facility. It was attributed to degraded waste gypsum. No observations of auto fluff or lime solvent sludge were noted. There were also no observations of highly impacted soil (e.g., heavy petroleum sheens, or heavily stained or highly odorous soil).

Underlying the fill layers is a native silt layer, gray to brown in color, with varying amounts of clay, sand, and woody organic material (roots or wood fibers). The silt layer was observed to have a thickness of 1 to 5 feet.

A native sand layer underlies the marsh silt layer. The sand is generally fine to medium-grained with minor gravel, loose, and dark gray in color with red and white flecks. The soil borings or well and piezometer installations did not reach the bottom of the native sand layer.

Numerous soil samples were collected across the property during the RI via test pits and soil borings. Results at that time were compared to numerical soil screening levels (SSLs) developed by Phillip Services for the nearby PSC site, now Stericycle. The SSLs used were developed for the nearby Philip Services facility (now Stericycle) and are considered protective of a variety of exposure pathways including worker exposure to soil and groundwater, ecological exposure, and soil leaching to groundwater at concentrations that would exceed ambient surface water quality criteria. The samples were tested for the following:

- **Polychlorinated Biphenyls (PCBs).** There were no detections of PCBs in any of the samples analyzed.
- **Volatile Organic Compounds (VOCs).** Of the 33 samples, only 1 showed detections; however, concentrations were less than SSLs.
- **Total Petroleum Hydrocarbons (TPH).** Several sample results showed detections of gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO). The greatest ORO detections were found in the surcharge soil, which displayed a hydrocarbon odor in places. Of the 32 samples, 1 contained ORO at 2,300 milligrams per kilogram (mg/kg), a concentration that slightly exceeded the SSL of 2,000 mg/kg.
- **Semivolatile Organic Compounds (SVOCs).** Several sample results showed detections of various polycyclic aromatic hydrocarbon (PAH) compounds, including some carcinogenic polycyclic aromatic hydrocarbon compounds. None had concentrations that exceeded the SSLs. Pentachlorophenol (PCP) was the only other SVOC detected, but only in one sample from test pit TP-16 at a concentration that exceeded the SSL.
- **Metals.** A total of eight metals were detected at concentrations that exceeded natural background. Metals exceedances were[1] typically limited to the eastern and southeast portions of the property. The metals that exceeded natural background included: arsenic, barium, cadmium, chromium, copper, lead, mercury, and zinc.

The final list of the contaminants of concern (COCs) in soil along with IA remediation levels are in Table 2.1, reproduced from the Interim Action Work Plan. The purpose of the remediation level was to set an upper bound on soil contamination that could be left on-property under pavement if encountered during construction. The lowest of all the various cleanup levels for each COC was then chosen as the IA remediation level. The remediation levels were typically set at the highest detected soil concentrations for each individual soil COCs as these maximum concentrations are considered empirically protective of groundwater based on the lack of significant groundwater contamination at this property.

[1] Soil background from the Washington State Department of Ecology's (Ecology's) *Natural Background Soil Metals Concentrations in Washington State* (October 1994).

## 2.2 GROUNDWATER

### 2.2.1 Hydrogeologic Units

The hydrogeologic conditions at the property are similar to those found throughout the Commencement Bay Nearshore/Tideflats. The near-surface hydrogeologic layers are identified as follows:

- Shallow fill aquifer
- Upper aquitard
- Intermediate aquifer

The shallow fill aquifer at the property is unconfined and exists solely in the fill soil. Its thickness varies between 1 to 5 feet and is shallower near the northwest side of the property. Water levels in the shallow fill aquifer fluctuate considerably in response to seasonal variations in precipitation and can be as shallow as 2 feet below grade. This aquifer is not tidally influenced. The shallow fill aquifer is equivalent to the designated A and B Zones at the CleanCare facility. The shallow fill aquifer is separated from the intermediate aquifer by the fine-grained silty sediments from the original tidal marsh. This marsh layer forms an aquitard due to its high clay/silt content. The upper aquitard was found in all five exploration locations where intermediate wells were installed.

The intermediate aquifer exists in the native sand layer, which underlies the tidal marsh clay/silt layer, as described above, and is subject to tidal influence by the Hylebos and Blair Waterways. This aquifer is equivalent to the designated C Zone at the CleanCare facility.

### 2.2.2 Groundwater Flow

The shallow fill aquifer piezometric surfaces indicate a consistent northeasterly groundwater flow pattern. Groundwater elevations are highest in wells located along the western side of the property (i.e., those bordering CleanCare) and lowest in wells in the middle portion of the property. The flow direction is in accordance with the topographical gradient of the property. The lowest elevations occurred in Wells PMW-2A and PMW-3A. This caused the contours to form a “trough” in this area.

For the shallow fill aquifer, the CleanCare facility is upgradient of the Interim Action Area. Variations in the specific groundwater surface elevations due to seasonal fluctuations were observed during the three sampling events, but these fluctuations were not significant enough to alter the overall flow pattern for the shallow fill aquifer.

The flow direction of the intermediate aquifer across the property is generally to the south or southwest (i.e., toward the CleanCare facility). The piezometric gradient, however, is much flatter in the intermediate aquifer compared to the shallow fill aquifer, indicating slower groundwater flow velocities. The elevation of the groundwater surface in the shallow fill aquifer surface was always higher compared to the intermediate aquifer, typically in the range of 3 to 5 feet higher,

indicating a downward vertical hydraulic gradient. Figure 2.1 is a reproduction of the March 2006 groundwater flow map produced during the RI for the shallow fill aquifer.

### 2.2.3 2016 Groundwater Sampling Update

The 10 existing property monitoring wells consisting of 5 well pairs (shallow fill/intermediate aquifer) were sampled on December 28, 2016, at the request of Ecology. Results were provided to Ecology in the Interim Action Work Plan (Floyd|Snider 2017) and are summarized as follows:

- **VOCs.** Only two VOCs were detected: methyl-tert-butyl-ether and naphthalene. Concentrations were less than the Model Toxics Control Act (MTCA) Method A levels for groundwater.
- **TPH.** GRO and DRO concentrations were less than screening levels. Five locations (PMW-1A, -1B, -4B, -5A, and -5B) showed ORO exceeding screening levels. This result differs from the 2005/2006 RI results for DRO/ ORO. Silica gel cleanup was not used to remove polar organic compounds from the 2016 samples.
- **SVOCs.** Concentrations of PAH compounds, including 1- and 2-methylnaphtalene, acenaphthene, fluorene, phenanthrene, and naphthalene, were found in monitoring well samples from the upper aquifer at concentrations less than screening levels. PCP and bis-2-ethylhexyl phthalate, which were detected at concentrations greater than screening levels in 2005/2006, were not detected in 2016.
- **Metals.** Metal concentrations were generally consistent with previous investigations with only arsenic detected at concentrations greater than screening levels and only in 2 of 10 samples. The greatest arsenic concentration was 25 parts per billion, found at location PMW-3b within the intermediate aquifer. This compares well to the maximum concentration detected in 2005/2006 of 27 micrograms per liter (µg/L).

# 3.0 Work Completed

The preferred remedy identified in the FS report approved by Ecology in 2006 is consistent with the proposed Avenue 55 development plan. The remedy consists of covering contaminated soils by either asphalt pavement or warehouse buildings during property redevelopment. This action placed a protective cover between humans/wildlife and underlying contaminated soils. Subsequent to the FS, Ecology identified another potential exposure route involving VOCs or methane intruding into the indoor air spaces of proposed warehouse buildings. The scope of work for the IA therefore had a requirement to assess and mitigate against risk of possible VOC and methane intrusion into the warehouse buildings. The following sections describe in more detail the work elements that were performed consistent with the requirements of the Interim Action Work Plan (Floyd|Snider 2017).

## 3.1 WELL ABANDONMENT

The 10 existing groundwater monitoring wells and 4 piezometers were abandoned prior to construction. All 10 well locations were decommissioned on July 21, 2017, and all 4 piezometer locations were decommissioned on July 28, 2018. All locations were grouted in place, with the monuments left in place to be removed during construction. Wells and piezometers are shown on Figure 2.1. Well abandonment records are included in Appendix A.

## 3.2 IMPORT OF FILL SOIL AND SITE GRADING

To establish a firm subgrade, the first construction activity was soil compaction. This was done by importing 1 to 2 feet of fill that was laid out across the building footprints (Figure 3.1). This was followed by dynamic compaction of the underlying fill soils. Dynamic compaction uses a crane to lift and drop a heavy weight across the ground surface. This process created a series of small equally spaced depressions that consolidated the underlying fill soils. This was followed by the import of approximately 15,000 cubic yards of soil and approximately 10,000 cubic yards of crushed concrete. This additional fill was placed in large piles to reach an elevation of 17 feet (average fill thickness of 7 feet) to surcharge soil (i.e., induce settlement) and raise grades to meet the building slabs design elevation. The settling caused by the surcharge piles took about 6 to 8 weeks and was monitored using settlement markers. Once adequate settling was achieved, the surcharge pile was re-graded from an elevation of 17 feet by removing the top 4 feet of soil to meet the final grades necessary for the building finished floor elevation of 13 feet (Figure 3.2). The removed soil was spread out across the property where needed to meet pavement grades.

Following grading, the warehouses were constructed, which involved construction of sub-grade foundations and pouring of column footings and floor slabs followed by construction of tilt-up walls and trussed roofing supported by a perimeter footing. Underground utilities were also installed, and surrounding hardscape and landscape were completed.

Multiple sources of fill material were brought to the property. All fill soil imported was first considered for acceptance by review of a Phase I Environmental Site Assessment or similar due

diligence document regarding the likelihood of a "recognized environmental condition." Soil could be imported only after this review determined that past or current use had not resulted in impacts to the soil at concentrations exceeding either MTCA Method A or B unrestricted land use concentrations. A property visit was performed at all import source locations, as well prior to importing soils. Ecology was notified of the sources of fill material once the due diligence review was conducted and prior to the actual import of the soil, with the exception of fill brought in from established gravel and sand quarries.

The fill material from each source was brought to the site and then stockpiled and sampled prior to being used as fill. About 1 sample was collected for every 150 cubic yards of soil stockpiled. The analytical results were submitted to Ecology prior to spreading the soil. A summary of the quantity and location of fill source is shown in Appendix A. Full laboratory reports are included in Appendix B. Results of this effort document that there was no soil imported to the property with concentrations greater than MTCA Method A or B cleanup levels.

### 3.3 EXPORT OF SOIL

Due to the need to import soil, there was no anticipated need to export any of the soil as part of construction. However, during excavation, approximately 2,000 tons of lumber-rich soil was encountered at the north end of the property and was stockpiled at the south end of the property (Figure 3.3). The lumber-rich soil was unsuitable as site sub-grade and was excavated and stockpiled onsite. Eventually, 2,500 cubic yards of this material was sent to the LRI Landfill in Tacoma, Washington, after approval for disposal was granted by the Pierce County Department of Public Health (Appendix C). Photographs are provided in Appendix D. The removal of lumber-rich fill soil did not extend into native soils, so there was no need to provide archeological oversight per the Unanticipated Discovery Plan.

### 3.4 CONSTRUCTION STORMWATER

Coverage under the Construction Stormwater General Permit (CSWGP) was obtained by the contractor, Sierra Construction. The CSWGP coverage application indicated that the construction occurred within a contaminated cleanup site. A requirement of that permit coverage was to prepare a Stormwater Pollution Prevention Plan, which contained details on how stormwater was to be managed at the property.

An Ecology inspection in December of 2017 indicated some corrective actions were needed for the covering of stockpiled soil during grading of the site. The Ecology inspection report is provided in Appendix A.

Stormwater was diverted to an engineered detention pond. Excess water was pumped to holding tanks that were in turn discharged to the sanitary sewer under Permit SAD 17-011 from the City of Tacoma. That permit has a flow limitation and required batch testing for a wide variety of contaminants prior to discharge. Appendix B contains analytical testing results for discharged stormwater. Testing indicated no COCs were present in discharged stormwater. A sand filter was

employed to reduce turbidity in discharged stormwater. No other treatment technologies were needed to meet discharge criteria.

The stormwater pond remained in place until final grading occurred to prepare the property for paving.

### 3.5 PRE-SLAB METHANE AND SOIL VAPOR SURVEY

The methane survey and preliminary vapor intrusion (VI) assessment was performed before and during the preloading phase of construction at Building A and Building B. Surveys occurred in December 2016 and in April and May of 2018. Soil gas samples were collected above the shallow groundwater table at locations within each building footprint and along the future drive aisle between the two buildings. The vapor samples were field analyzed for methane using a landfill gas detector. At a subset of the locations, soil gas samples were collected for laboratory analysis of VOCs. The locations of the methane and VOC samples are shown on Figure 3.3. The results of the methane survey and preliminary VI assessment were summarized in a memorandum (Floyd|Snider 2018; refer to Appendix A).

Methane was not detected in soil gas at either building at concentrations greater than action levels in the Interim Action Work Plan. The maximum detected soil methane concentration was 1.4 percent by volume, well less than the 5% threshold.

At Buildings A and B, the collection of samples for VI assessment was conducted during April and May of 2018 but sampling for VOCs was complicated by excessive moisture and perched wet lenses in the soil and pad backfill. Multiple attempts were made to acquire samples free of moisture but were mostly unsuccessful due to water in the sampling point. In the sample points that successfully produced soil gas, the laboratory reported excessive water vapor as well as excessive residual vacuum in the Summa canister. Chloroform, benzene, and other VOCs exceeded MTCA industrial screening levels at several locations; however, these data were not considered to be reliable due to the bias caused by the presence of water vapor. It was decided that future sampling of sub-slab vapors would be needed to obtain the representative samples required to assess the VI risk potential.

### 3.6 VAPOR BARRIER CONSTRUCTION

As a precautionary measure, a vapor intrusion mitigation system was installed under each of the two office locations in both buildings. The office nodes are shown on Figure 3.4. As described in Floyd|Snider's August 2018 memorandum (Appendix A) the mitigation system includes perforated PVC piping laid in trenches under the subgrade of the office areas. The piping is connected to an aboveground riser vent. After the piping was installed, it was overlain with a PVC membrane and the concrete floor slab was subsequently poured over the membrane. The system allows ventilation to occur by atmospheric pressure differentials (i.e., soil vapor at pressure exceeding atmospheric pressure vents via the riser so vapor pressure cannot build up below the floor slab and enter the office areas). The vertical riser may also be equipped with an inline blower to further reduce soil vapor pressure under the floor slab.

The plans for the vapor barriers that were constructed are in Appendix A, including field reports documenting installation.

### 3.7 SUB-SLAB SOIL VAPOR SURVEY

Following completion of the floor slabs for Buildings A and B, 12 sub-slab vapor pins were installed at Buildings A and B and sampled twice for the full suite of VOCs. Refer to Figure 3.4 for location of the pins. The purpose of this sampling was to determine if the concentrations of VOCs measured beneath the buildings warrant further action.

Refer to Appendix A for the November 2018 memorandum describing the full work that was performed including a table of analytical results compared to screening levels. The results of the two rounds of sampling did not indicate the presence of any VOCs at concentrations that would pose a potential risk of vapor intrusion into the warehouses, and so an Operational and Maintenance and Sampling and Analysis Plan for the future operation of the vapor intrusion mitigation system is not necessary or warranted.

# 4.0 Institutional Controls

As detailed in the Interim Action Work Plan, institutional controls are required for the parcels within the Interim Action Area. Environmental (Restrictive) Covenants will be used to implement the institutional controls. In consultation with Ecology, the Port will prepare Environmental (Restrictive) Covenants consistent with WAC 173-340-440, RCW 64.70, and any policies or procedures specified by Ecology. The Environmental (Restrictive) Covenants shall restrict future activities and uses of the parcels within the Interim Action Area as agreed to by Ecology and the Port with specific details to emerge during the development of the final cleanup plan for the TWAAFA.

# 5.0 References

Floyd|Snider. 2006. *Prologis Taylor Way Property Feasibility Study*. Prepared for Prologis. December.

_____. 2017. *1514 Taylor Way Development Interim Action Work Plan*. Prepared for Avenue 55, LLC. June.

_____. 2018. *Sampling Plan Addendum for Vapor Intrusion Assessment, 1544 Taylor Way, Tacoma, Washington.* Memorandum to Steve Teel, Ecology, from Tom Colligan and Kristin Anderson, Floyd|Snider. 10 August.

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# Interim Action Completion Report

# Table

**Table 2.1**
**Contaminants of Concern/Remediation Levels for Soil[1]**

| Primary Contaminants of Concern | Maximum Concentration[2] | Unrestricted Land Use Cleanup Level | Remediation Level: Modified MTCA Method C Direct Contact, Excavation Worker Scenario[3] | Cleanup Level: Protection of Groundwater | Cleanup Level: Ecological[4] | Interim Action Remediation Level | Basis of Site Cleanup Level |
|---|---|---|---|---|---|---|---|
| Arsenic III/V | 130 | 203 | 2,244 | 203 | 20/260 | 130 | Empirical soil protection of groundwater |
| Copper | 150 | 3,200[5] | 299,22[4] | 36[6] | 550 | 150 | Empirical soil protection of groundwater |
| Lead | 520 | 250[7] | 1,000[8] | 150[9] | 220 | 520 | Empirical soil protection of groundwater |
| DRO | 1,400 | 2,000[10] | NA | 2,000[5] | 2,000 to 15,000[11] | 3,300 | Empirical soil protection of groundwater |
| ORO | 2,300 | | NA | | | | |
| Total carcinogenic PAH[12] | 5.9 | 0.1 | 552 | 0.1 | 300[9] | 5.9 | Assumed soil protection of groundwater |
| Pentachlorophenol | 11 | 2.5 | 14,026 | 0.0158 | 11 | 11 | Empirical soil protection of groundwater |

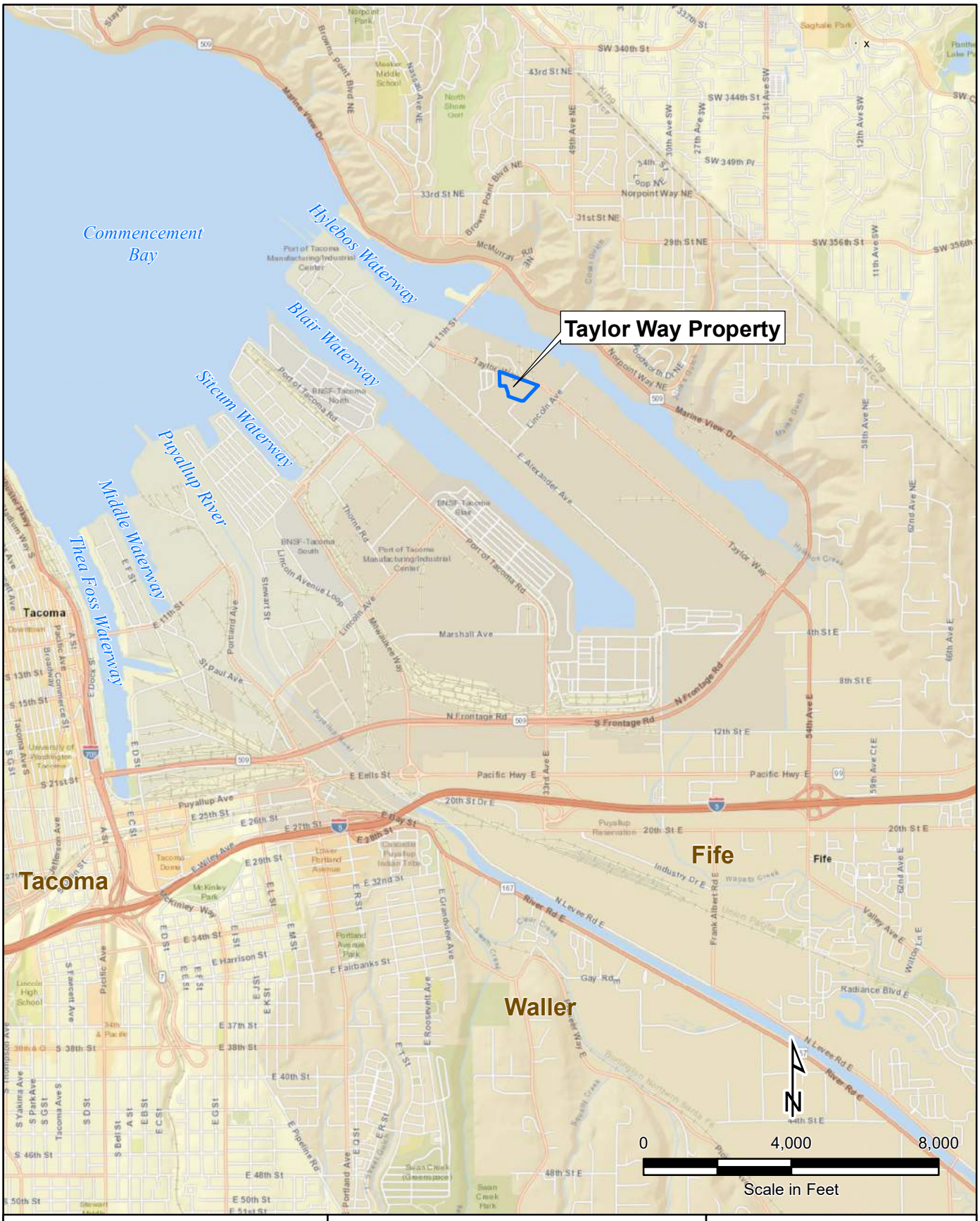
Notes:
1 Units in milligrams per kilogram.
2 Detections from the 2006 *Prologis Taylor Way Property Remedial Investigation* (Floyd|Snider 2006a).
3 Excavation worker scenario calculated using parameter values from Oregon Department of Environmental Quality's *Human Health Risk Assessment Guidance* (October 2010) and calculated using WAC 173-340-745 equations 745-4 and 745-5.
4 Based on the values in WAC 173-340-7492, Table 749-2 for Commercial/Industrial Sites. However, the terrestrial ecological pathway will be blocked following the interim action because all surfaces will be covered with either hardscape or buildings.
5 MTCA Method B, non-cancer direct contact.
6 Soil background from the Washington State Department of Ecology's (Ecology's) *Natural Background Soil Metals Concentrations in Washington State* (October 1994).
7 MTCA Method A, Unrestricted Land Uses.
8 Direct contact cleanup level from MTCA Method A, Industrial Land Use.
9 Obtained using the July 2015 CLARC database tables for Protection of Groundwater in the Saturated Zone.
10 MTCA Method A, Unrestricted Land Uses, combined DRO and ORO cleanup levels as per Ecology's *Implementation Memorandum #4: Determining Compliance with Method A Cleanup Levels for Diesel and Heavy Oil* (June 17, 2004).
11 Compliance with the cleanup level determined by DRO, which includes the sum of diesel fuels and heavy oils using the NWTPH-Dx method.
12 Levels based on the soil concentration for benzo(a)pyrene, toxic equivalent normalized per WAC 173-340-708(a).

Abbreviations:
ARAR Applicable or Relevant and Appropriate Requirements
DRO Diesel-range organics
GW Groundwater
GRO Gasoline-range organics
MTCA Model Toxics Control Act
NA Not applicable
PQL Practical quantitation limit
PAH Polycyclic aromatic hydrocarbon

## 1514 Taylor Way Development

# Interim Action Completion Report

# Figures

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**Tacoma, Washington**

Figure 1.1
Vicinity Map

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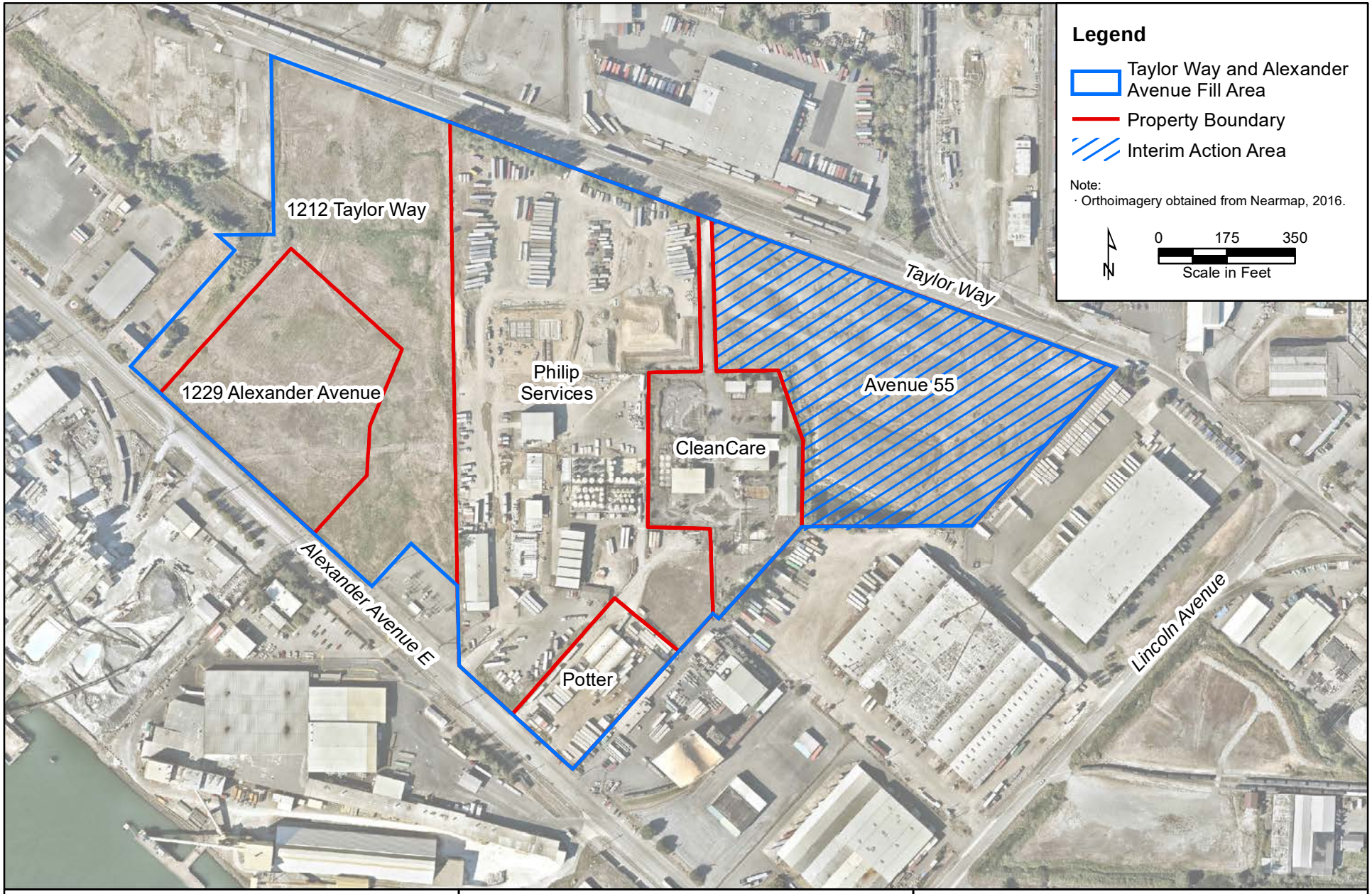


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**Tacoma, Washington**

Figure 1.2
Site Map

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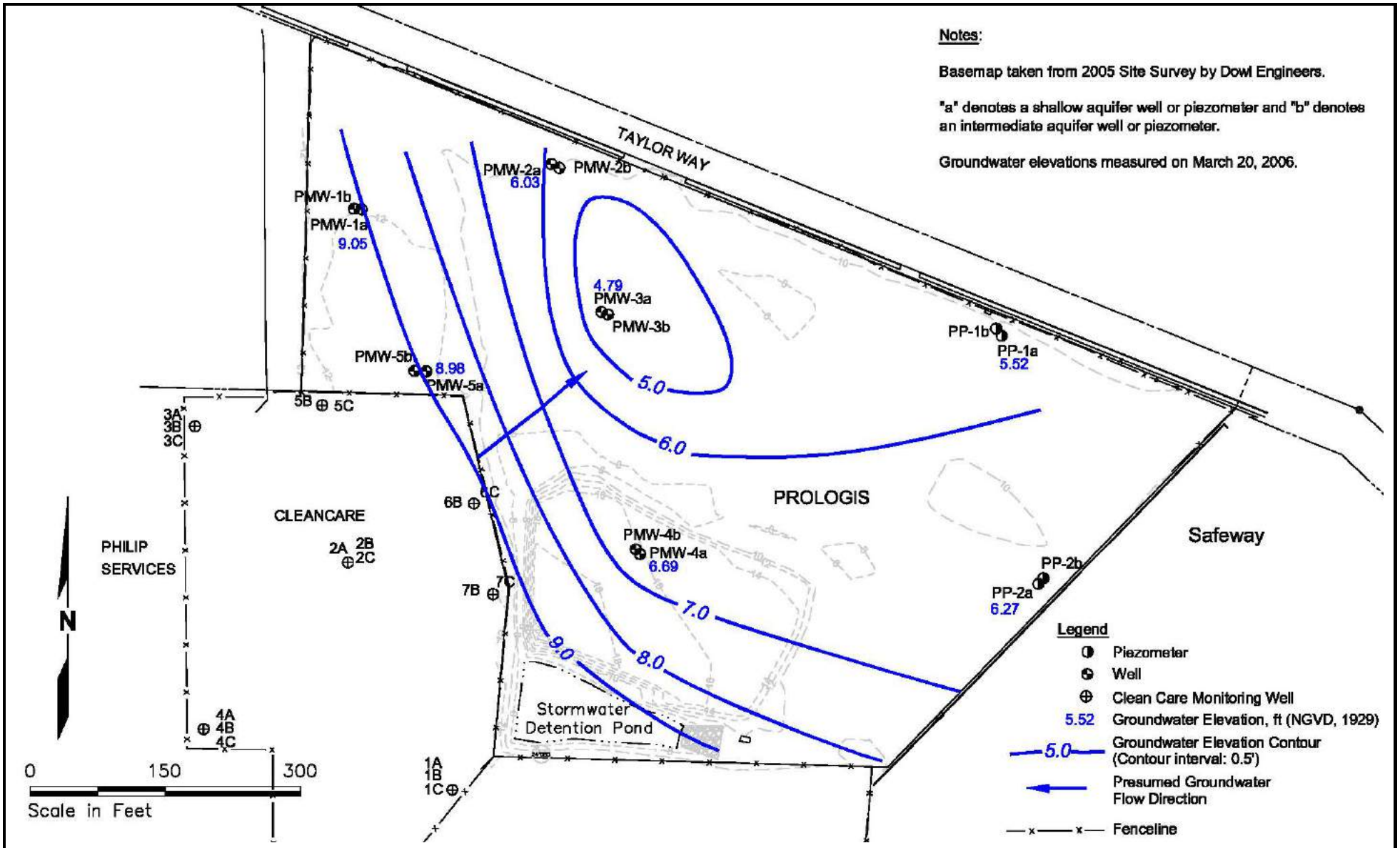
2/25/2019




Source: ProLogis Taylor Way Property Remedial Investigation, Floyd|Snider 2006.

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**Tacoma, Washington**

Figure 2.1
March 2006 Groundwater Flow Map
of the Shallow Aquifer

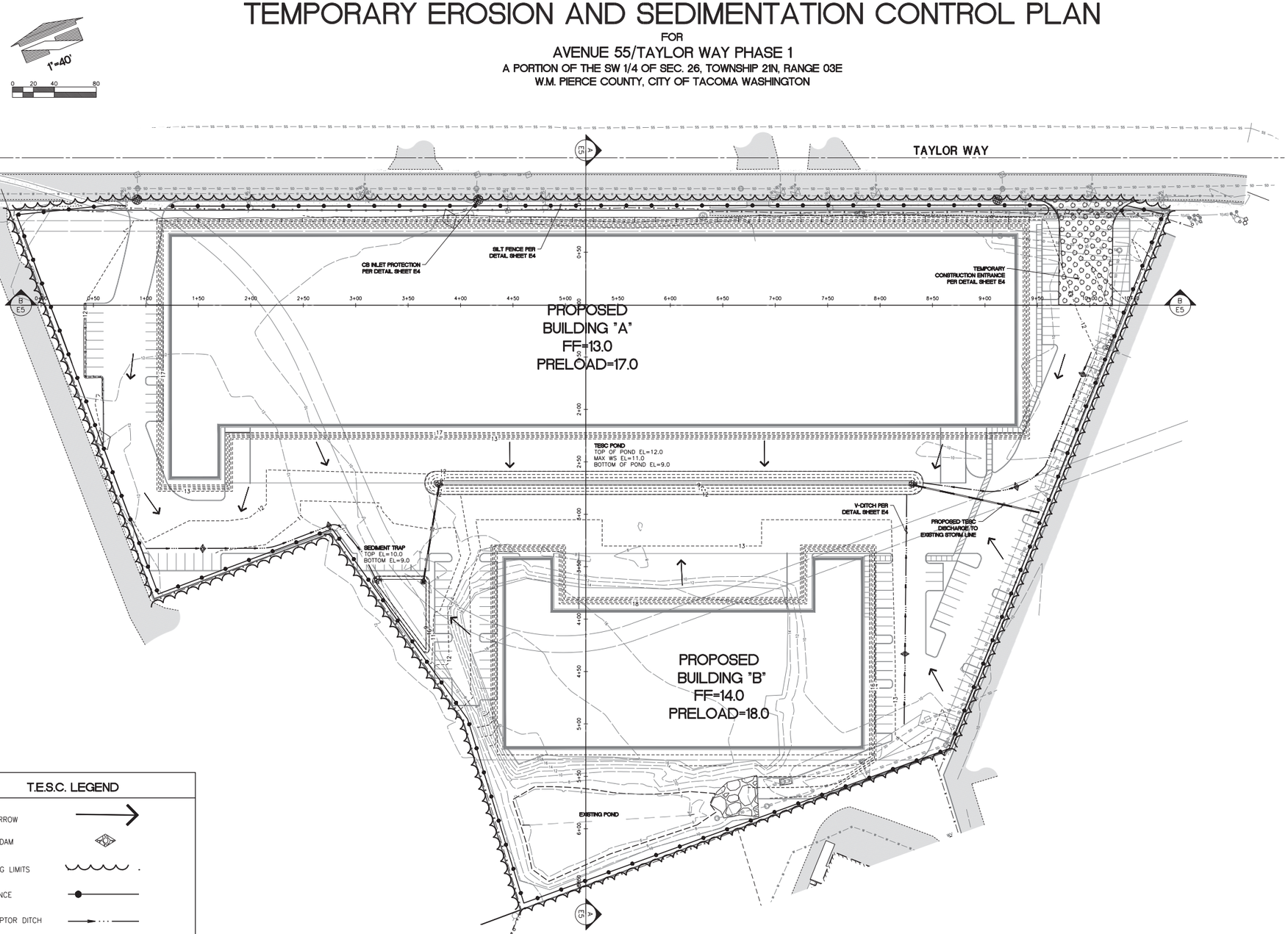
# TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN

FOR

AVENUE 55/TAYLOR WAY PHASE 1

A PORTION OF THE SW 1/4 OF SEC. 26, TOWNSHIP 21N, RANGE 03E

W.M. PIERCE COUNTY, CITY OF TACOMA WASHINGTON




Revision: No. | Date | By | Chd. | Appr.

Title: TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN FOR AVENUE 55/TAYLOR WAY TACOMA-PHASE 1

For: AVENUE 55
600 UNIVERSITY STREET, SUITE 2305
SEATTLE, WA 98101

DANIEL K. BALDWIN — STATE OF WASHINGTON — 25672 — REGISTERED PROFESSIONAL ENGINEER
4/13/2017

Scale: Horizontal 1"=40' Vertical -

Designed MKD | Drawn MKD | Checked CP | Approved Dept. | Date 1/31/17

18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
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CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

BARGHAUSEN CONSULTING ENGINEERS, INC.

Job Number 18293 | Sheet E3 of 5

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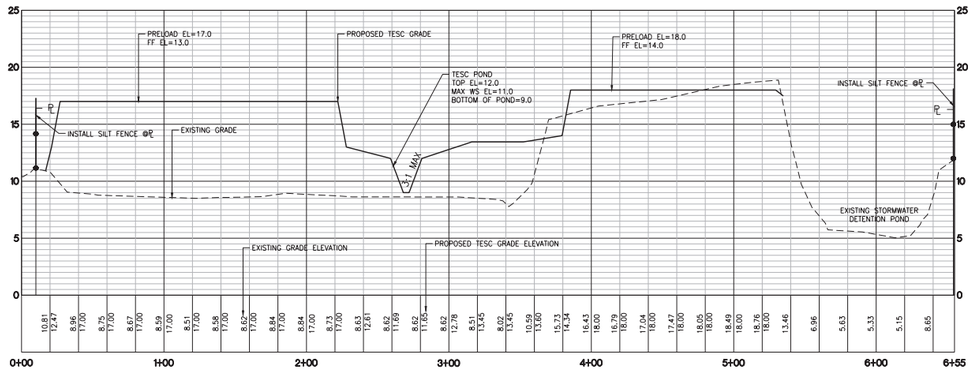
# TEMPORARY EROSION AND SEDIMENTATION CONTROL PROFILES

FOR

AVENUE 55/TAYLOR WAY PHASE 1

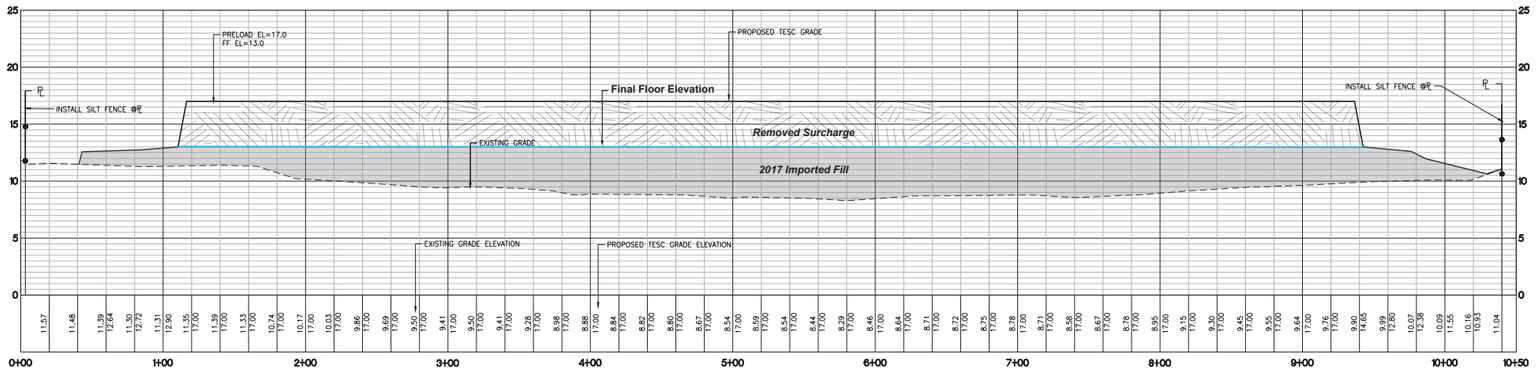
A PORTION OF THE SW 1/4 OF SEC. 26, TOWNSHIP 21N, RANGE 03E

W.M. PIERCE COUNTY, CITY OF TACOMA WASHINGTON




SECTION A

SCALE: H:1"=40' V:1"=5'




SECTION B

SCALE: H:1"=40' V:1"=5'

| No. | Date | By | Chck. | Appr. | Revision |
|---|---|---|---|---|---|

Title: TEMPORARY EROSION AND SEDIMENTATION CONTROL PROFILES FOR AVENUE 55/TAYLOR WAY TACOMA-PHASE 1

For: AVENUE 55
600 UNIVERSITY STREET, SUITE 2305
SEATTLE, WA 98101

DANIEL K. BALDWIN — STATE OF WASHINGTON — 25672 — REGISTERED PROFESSIONAL ENGINEER

4/13/2017

Scale: Horizontal 1"=40' Vertical 1"=5'

Designed MEO Drawn MEO Checked CP Approved DKB Date 1/11/17


BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8762 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES


Job Number 18293

Sheet E5 of 5

File:P:\18000s\18293\preliminary\18293-ep.dwg Date/Time:4/13/2017 9:54 AM Scale:1" = 1" WDUNLAP Xref: ---

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**Interim Action Completion Report**
**1514 Taylor Way Development**
**Tacoma, Washington**

Figure 3.2
Section Lines Showing Preload and Final Fill Elevations

I:\GIS\Projects\Ave55-TaylorWay\AI\IACR\Figure 3.2 Section Lines showing Preload and Final Fill Elevations.ai
05/21/2019

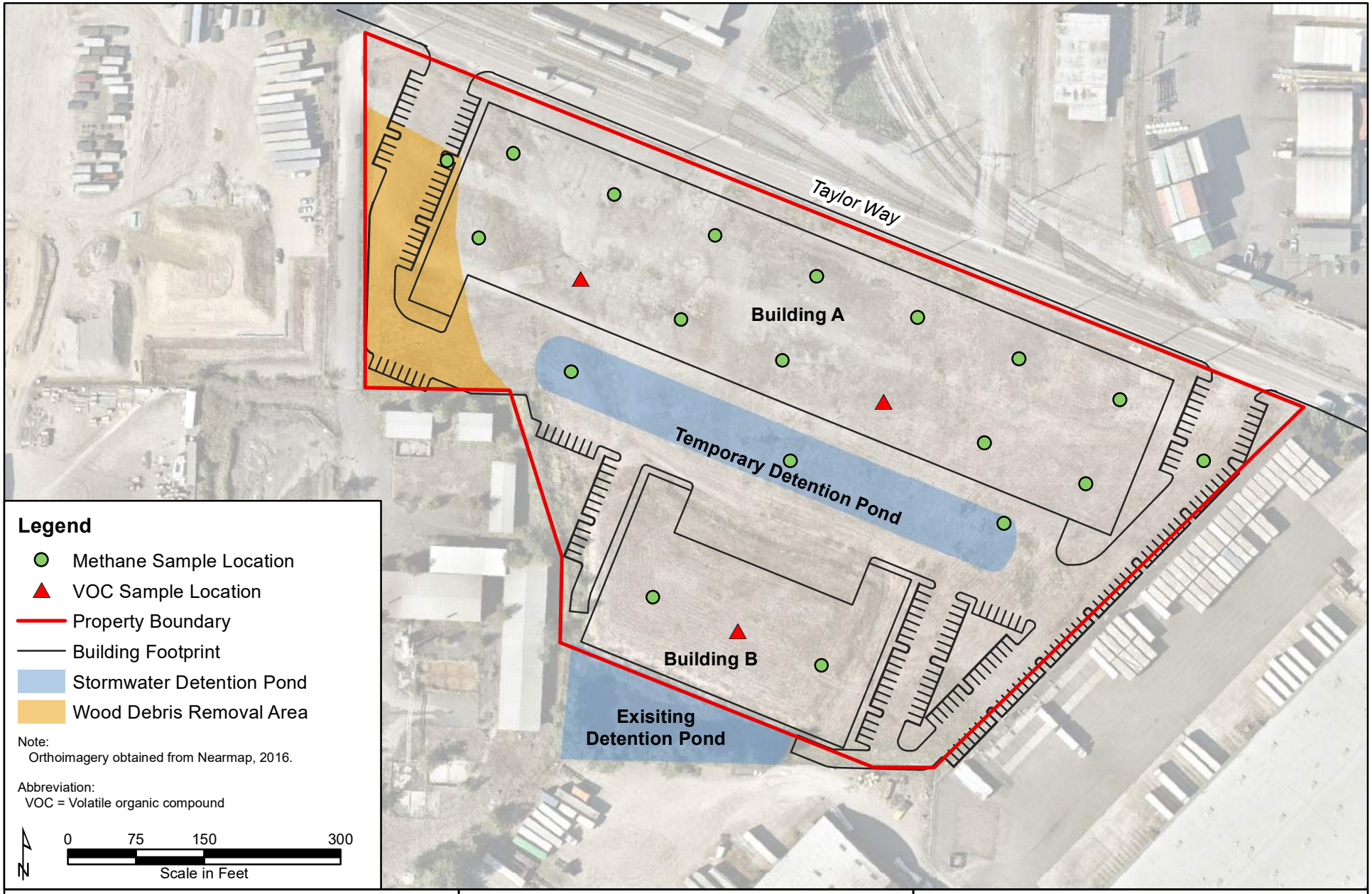


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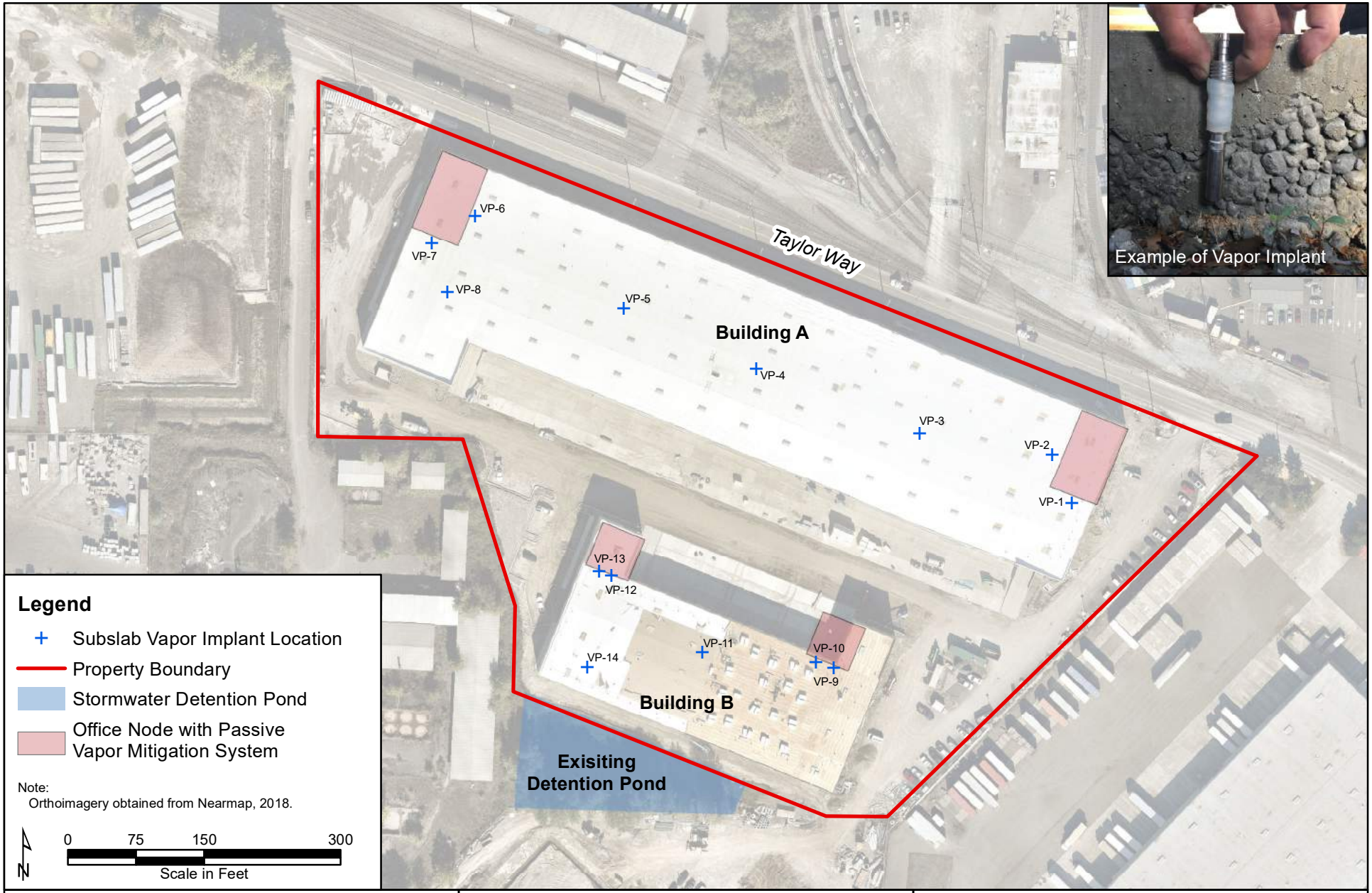
Figure 3.3
Construction Features and
Soil Gas Survey Sample Locations

I:\GIS\Projects\Ave55-TaylorWay\MXD\Interim Action Completion Report\Figure 3.3 Construction Features and Soil Gas Survey Sample Locations.mxd
5/21/2019

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**Interim Action Completion Report**
**1514 Taylor Way Development**
**Tacoma, Washington**

Figure 3.4
Subslab Vapor Implants and Office Node Vapor Mitigation System Locations

I:\GIS\Projects\Ave55-TaylorWay\MXD\Interim Action Completion Report\Figure 3.4 Subslab Vapor Implants and Office Node Vapor Migration System Locations.mxd
5/21/2019

1514 Taylor Way Development

# Interim Action Completion Report

# Appendix A
# Memoranda and Field Reports

DEPARTMENT OF ECOLOGY
State of Washington

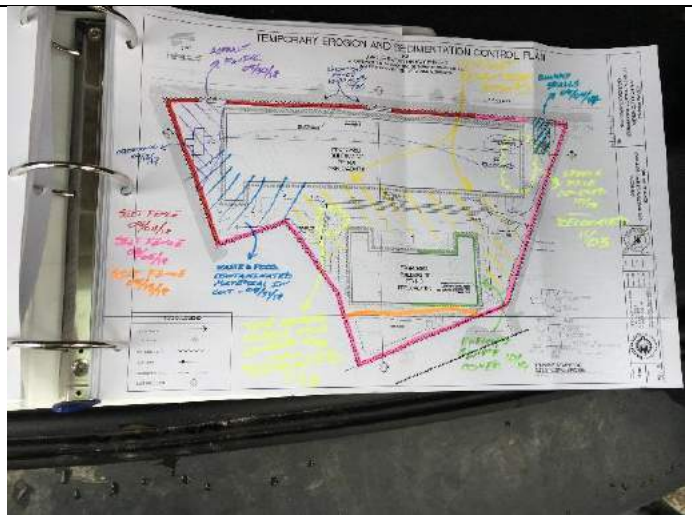
# Water Quality Program
# Corrections Required

| Construction Stormwater General Permit (CSGP) ☒ | Industrial Stormwater General Permit (ISGP) ☐ | Sand and Gravel General Permit (S&G) ☐ |
|---|---|---|

| | |
|---|---|
| Site name: Avenue 55 Lincoln Avenue Phase 2 | Mailing address – 19900 144th Ave NE |
| Site address: 3401 Lincoln Ave | City, State, Zip: Woodinville, WA 980072 |
| City, State, Zip: Tacoma, WA 98421 | Phone: 206.406.7979 |
| Site contact: Jason Nix | Permit #: WAR305398 |
| Ecology inspector(s): Carol Serdar | Inspection date: 11/20/2017 |
| Inspector phone: 360.407.6269 FAX: 360.407.6305 | E-mail: cser461@ecy.wa.gov |
| Notice of Penalty issued ☐ Yes ☒ No Field Citation # | Latitude and longitude *(if available):* |

The Department of Ecology (Ecology) is responsible for overseeing environmental laws that protect human health and the environment in Washington. Ecology observed violations of Chapter 90.48 of the Revised Code of Washington (RCW), Chapter 173-226 of the Washington Administrative Code (WAC), Waste Discharge General Permit Program during this site visit. Violations observed are checked below.

| Violation No. | Violation | Reason | Permit Condition |
|---|---|---|---|
| ☐ 1 | RCW 90.48.160 | Operating or discharging without a permit (all) | Does not apply. |
| ☐ 2 | RCW 90.48.080 | Polluting waters of the state (all) | |
| ☐ 3 | RCW 90.48.080 | Polluting impaired waters, discharge exceeds 303(d) limit (CSGP and ISGP) | |
| ☐ 4 | WAC 173-201A or WAC 173-200 | Violating Water Quality Standards *(List specific standard violated.)* (all) | |
| ☐ 5 | RCW 90.48.090 | Denial or withdrawal of access (all) | |
| ☐ 6 | RCW 90.48.080, WAC 173-226-070 | Process water discharge without treatment in lined impoundment (S&G) | |
| ☐ 7 | RCW 90.48.080, WAC 173-226-070 | Failure to clean up oil spills or repair leaking equipment (S&G) | |
| ☐ 8 | RCW 90.48.080, WAC 173-226-070 | Cover or containment not provided for chemical or petroleum products (all) | |
| ☐ 9 | RCW 90.48.080, WAC 173-226-070 | Corrective Action not taken (ISGP) | |
| ☐ 10 | RCW 90.48.080, WAC 173-226-070 | No Stormwater Pollution Prevention Plan (SWPPP) (all) | |
| ☐ 11 | RCW 90.48.080, WAC 173-226-070 | SWPPP does not meet permit requirements (all) | |
| ☒ 12 | RCW 90.48.080, WAC 173-226-070 | ☒ Not maintaining best management practices (BMPs) (all)<br>☒ Not implementing BMPs (all)<br>☐ Failure to modify SWPPP per permit or Dept. of Ecology Notice (all) | |
| ☐ 13 | RCW 90.48.080, WAC 173-226-070 | ☐ BMPs not maintained per permit or Dept. of Ecology Notice (all)<br>☐ BMPs not implemented per permit or Dept. of Ecology Notice (all) | |
| ☐ 14 | RCW 90.48.080, WAC 173-226-070 | ☐ Inspections not completed as required by permit (CSGP and ISGP)<br>☐ Inspections do not comply with permit requirements (CSGP and ISGP) | |
| ☒ 15 | RCW 90.48.080, WAC 173-226-090 | ☐ Monitoring not conducted as required by permit (all)<br>☒ Sampling does not comply with permit requirements (all) | S4.B.2. |
| ☐ 16 | RCW 90.48.080, WAC 173-226-070 | ☐ Not keeping site log book (CSGP and ISGP)<br>☐ Not keeping inspection reports or checklists (CSGP) | |
| ☐ 17 | RCW 90.48.080, WAC 173-226-090 | ☐ Did not telephone report turbidity greater than 250 NTU (CSGP), or threshold exceeded (ISGP)<br>☐ No Discharge Monitoring Reports available (all)<br>☐ Failure to notify Dept. of Ecology of noncompliance with permit requirement (all) | |
| ☒ 18 | RCW 90.48.080 | Discharging of polluting matter in waters of the state | S3.; S5.F; S9.D.9.; G11. |
| ☐ 19 | | | |

| Violation No. | Observation(s) and action(s) required to achieve compliance. (see permit conditions) | Complete or Submit Date |
|---|---|---|
| 12 |  Stockpile of concrete rubble inadequately covered to prevent potential migration of pH laden water from discharging or infiltrating on site. **This is a violation on CSWGP condition S9.D.9. Control Pollutants and S9.D.11. Maintain BMPs.**<br><br>**TO DO:** Follow installation and maintenance Send photos of BMPs (C2123 and C235) installed as per Stormwater Management Manual as amended in 2014. | 12/05/2017 |
| 15<br>18 |  Contaminated stockpile inadequately covered, and turbid water is shown discharging to catch basin (waters of the state). Contaminated soil is from WAR305424 (Phase 1) and was observed on 10/16/2017 (see inspection by Honor Carpenter). Turbidity was not sampled at this location. **This is a violation on CSWGP condition S9.D.9. Control Pollutants and S9.D.11. Maintain BMPs.**<br><br>**TO DO:** Follow installation and maintenance Send photos of BMPs (C2123 and C235) installed as per Stormwater Management Manual as amended in 2014. | 12/05/2017 |
| |   Haul route not shown, but was described by CESCL that the contaminated stockpile was moved on 11/3 to Phase 2 (south of Phase 1). This site now has contaminated stormwater from the inadequately covered stockpile of contaminated soil. Based on newly contaminated material onsite, documentation within the SWPPP must clearly state how contaminated soil is managed.<br><br>**TO DO:** Provide Ecology with a detailed narrative for WAR305398 on how the contaminated stormwater and contaminated soil will be managed. Show on a map the movement of stormwater to all discharge locations. These must also be incorporated into the SWPPP. | 12/05/2017 |

| | | |
|---|---|---|
| | **Corrective actions accomplished:**<br>On the afternoon of 11/20/2017 Jason sent an email narrative, with photos, describing the repairs to the BMPs. Jason stated the discharge to sanitary has been unsuccessful.<br><br>Ecology replied on 11/21/2017 that all discharges must be sampled. The above photo of stockpile adjacent to the catch basin was not sampled. Ecology requested that an ERTS be submitted for this turbid discharge with an estimate of +1000 NTU. Jason submitted an ERTS on 11/21/2017 and was assigned ERTS #677378. Jason stated that the turbid discharge was from the parking area. **There is no evidence that the turbid water did not also migrate from the inadequately covered stockpile of known contaminated soil** (moved from CSWGP WAR305424 to the north – Phase 1). | |

**Instructions**:

- These corrective action requirements are not an enforcement order and are **not appealable.**
- If a penalty accompanies these corrective action requirements, **the penalty is appealable.**
- **Appeal directions are on the back of the penalty.**
- Failure to comply with these corrective action requirements may result in enforcement action.

1. To comply with the water quality regulations, complete the actions identified in the table above.
2. If you have questions, contact Carol Serdar, Ecology inspector, at 360.407.6269.
3. To request an extension, **send a written request** to the Ecology inspector by _____.

   Ecology will notify you if an extension is granted. Please include all of the following:
   - Reason extension is needed.
   - Steps already taken.
   - Description of work that remains to be completed.
   - Anticipated completion date.

**Send required document(s) to the appropriate Ecology office:**

Bellingham Field Office
1440 10th St Ste 102
Bellingham WA 98225
360-715-5200

Vancouver Field Office
2108 Grand Blvd
Vancouver WA 98661
360-690-7171

Central Regional Office
15 W Yakima Ave Ste 200
Yakima WA 98902
509-575-2490

Northwest Regional Office
3190 160th Ave SE
Bellevue WA 98008-5452
425-649-7000

Southwest Regional Office
PO Box 47775
Olympia WA 98504-7775
360-407-6300

Eastern Regional Office
4601 N Monroe
Spokane WA 99205-1295
509-329-3400

Ecology Inspector (signature): ***Carol Serdar*** Date: ***28 November 2017***

Owner/Operator (signature): *sent via email* Date: *28 November 2017*

Owner/Operator (print name): *Jason Nix / Bryan Ploez* Date:

*If you need this publication in an alternate format, call the Water Quality Program at 360-407-6722. Persons with hearing loss call 711 for the Washington Relay Service. Persons with a speech disability call 877-833-6341*

avenue55

# Memorandum

**To:** Kurt Freeman & Mark Schuler- City of Tacoma

**Copies:** Jason Nix (Sierra Construction), Tom Colligan (Floyd Snider), Scott Hooton and Anita Fichthorn (Port of Tacoma)

**From:** Drew Zaborowski (Avenue 55)

**Date:** 12/07/2017

**Project No:** Ave 55 Portside Development-located at 1514 Taylor Way

**Re:** **Analytical Testing for City of Tacoma Sewer Discharge SAD 17-011**

The property located at 1514 Taylor Way has been thoroughly investigated for the presence of hazardous substances as required by the Model Toxics Control Act (MTCA), RCW 70.105D.050(1). That work was performed under the authority of legally binding administrative orders issued by the Washington Department of Ecology (Ecology) and under the direct supervision of Ecology staff from the Toxics Cleanup Program.

This memo compares the discharge limits in the above-referenced Sewer Authorization Discharge (SAD) to the extensive soil and groundwater chemical concentration data obtained as part of the MTCA investigation of this property. The comparison shows that the highest concentrations of hazardous substances detected in groundwater are significantly lower than the discharge limit criteria listed on the SAD. The memo also provides the basis for concluding that requirements to test each batch of water for the extensive list of hazardous substances o the SAD prior to discharge to the sanitary sewer is not necessary or warranted.

**Background**

In January 2005, a remedial investigation (RI) and feasibility study (FS) was required for the 1514 Taylor Way Property under the authority of Ecology Agreed Order DE 04TCPSR-1160. The RI investigated potential releases of hazardous substances that may have been caused by industrial and/or fill activities historically conducted on the 1514 Taylor Way property or on adjoining properties. This work involved the digging of 41 test pits, collection of temporary groundwater samples at 13 locations and installation of 10 permanent monitoring wells. Hundreds of samples were collected and analyzed,

Detected concentrations in groundwater were compared to potable drinking water standards or background concentrations (criteria) to identify contaminants of concern. For soil, conservative partition modeling was utilized to determine whether or not a detected chemical could dissolve into groundwater at a concentration exceeding potable water or background criteria. Metals

(arsenic, barium, chromium and zinc), Total Petroleum Hydrocarbons (TPH) and semi-volatile organic compounds (SVOCs) were identified as contaminants of concern based on a comparison of detected concentrations to extremely conservative Ecology criteria. These criteria (e.g. MTCA Method A) are substantially lower in concentration than discharge limit criteria listed on the SAD.

Given that very little contamination was detected and at very low concentrations, the FS recommended capping of soils with pavement or buildings in conjunction with redevelopment as the preferred remedy. This preferred remedy was designed to maintain groundwater quality based on potable water or background criterion.

Implementation of the preferred remedy identified in the FS is required for the 1514 Taylor Way Property under the authority of Ecology Agreed Order DE13921 (July, 2017), as is described in the associated Interim Action Work Plan (IAWP). The IAWP included provisions for the testing and Ecology review and approval to ensure that all imported soil was free of contamination. The IAWP also incorporated a construction stormwater general permit (CSWGP) as well as a Stormwater Pollution Prevention Plan (SWPPP), which contains details on how stormwater will be managed to comply with permit conditions. Temporary erosion and sediment control (TESC) measures in the SWPPP included measures to prevent stormwater from running off-property, and the SAD was obtained as a contingency to enable SWPPP compliance as a contingency to manage significant accumulations of stormwater.

Clean soil has been imported to the site to preload the subgrade and establish elevations suitable for building construction. A significant volume of stormwater (estimated volume 1MG) has since accumulated upon the clean fill in a temporary detention pond on the center of the 1514 Taylor Way Property. The volume of stormwater present at the site is slowing construction required to complete the work under Ecology Agreed Order DE13921.

The following paragraphs summarize site conditions.

**GROUNDWATER CONTAMINANTS-**

All 11 site wells were tested in 2005, 2006 and again in December of 2106. None of the results exceeded or even came close to SAD criteria. The only result above Ecology-assumed state-wide background levels was arsenic (2 of 11 wells) or drinking water criteria for heavy oil TPH (5 of 11 wells). The arsenic is thought to be a consequence of elevated natural background in the Tacoma area. No SVOC or VOC compounds were detected and all other metals tested were at levels indicative of natural background. Data summary tables from the relevant reports are attached.

**SOIL CONTAMINANTS**

While some detected concentrations did exceed MTCA criteria for soil, the levels are too low to result in concentrations exceeding SAD discharge limits. A summary follows:

PCBs- none detected in 22 samples analyzed

Volatile Organics and BTEX- the only VOC detected was xylene in only one sample out of 22 analyzed. No other VOCs were detected. The xylene concentration was 1/300 of the MTCA cleanup level.

Petroleum Hydrocarbons - One sample of 37 contained TPH above the MTCA A heavy oil cleanup level. This sample location was subsequently excavated during recent construction.

Semi-Volatile Organic Compounds - 5 samples out of 22 contained primarily PAH compounds above the MTCA A cleanup level. Some of these locations were subsequently excavated during recent construction.

Metals- 3 samples out of 32 contained metals, primarily arsenic, cadmium, and lead above MTCA A cleanup levels. These sample locations were subsequently excavated during recent construction.

**RECENT FILL TESTING**

Beginning in the fall of 2017, nearly 15,000 cubic yards of fill has been imported to this site to raise site grade by several feet and to provide surcharge. Ecology-required testing for metals, TPH, VOCs and SVOCs on every 300 cubic yard stockpile of imported fill has shown no contamination in the nearly 50 samples that have been analyzed to date. This soil was spread out over the existing ground surface as noted earlier.

**SAD PERMIT TESTING PARAMETERS**

The City of Tacoma is requiring testing for a wide variety of contaminants as detailed below:

METALS - 11 various metals, and additionally hexavalent chromium. Of these metals, only arsenic has been detected in groundwater above MTCA A cleanup levels, but at a level far less than the SAD permit threshold. Extensive testing has shown very little heavy metal contamination and what was detected in soil above MTCA A has been subsequently removed.

CYANIDE- Both Free and Total- there is no reason to suspect that cyanide would have been used at this site.

Total Petroleum Hydrocarbons- the SAD limit is 30 times higher than the highest recorded concentration every detected in groundwater at this site.

Total Toxic Organics and BTEX- extensive prior testing has shown these contaminants are not present at the Site.

**STORMWATER SAMPLES-**

To date, 3 batch samples of stormwater have been collected from the two on-site tanks and no contaminants have been detected at levels even remotely close to the discharge limits. In fact the only analytes detected have been copper, chromium, nickel, and zinc, most likely due to the

unfiltered nature of the samples, and phthalates, which are ubiquitous lab contaminants. The recent lab reports are attached.

The results to date conclusively demonstrate that the stormwater that is being collected prior to discharge flows off clean fill soils that have been placed at this site.

**CONCLUSIONS-**

The elimination of a requirement for batch testing is supported by the following lines of evidence:

- The extensive amount of groundwater data collected under the MTCA process shows that all concentrations are well below SAD discharge thresholds.
- The extensive amount of soil data shows that concentrations will not partition into water at concentrations above SAD discharge thresholds.
- Imported soil came from uncontaminated sources; water accumulating on 1514 Taylor originated as recent stormwater.
- Batch testing of stormwater shows that concentrations are below SAD discharge thresholds.

Attachments: Data Summary Tables; Laboratory Reports

References

FloydISnider. 2004. *Prologis Taylor Way Property, Remedial Investigation/Feasibility Study Work Plan*. Prepared for Prologis. December

FloydISnider. 2006a. *Prologis Taylor Way Property, Remedial Investigation.* Prepared for Prologis. 3 October

FloydISnider. 2006b. *Prologis Taylor Way Property, Feasibility Study Work Plan*. Prepared for Prologis. December

FloydISnider. 2017. *1514 Taylor Way Development Interim Action Work Plan*. Prepared for Avenue 55, LLC. June

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Two Union Square
601 Union Street, Suite 600
Seattle, WA 98101
tel: 206.292.2078 fax: 206.682.7867

# Memorandum

**To:** Steve Teel, Washington State Department of Ecology

**Copies:** Drew Zaborowski, Avenue 55; Scott Hooton, Port of Tacoma

**From:** Tom Colligan and Kristin Anderson, Floyd|Snider

**Date:** June 8, 2018

**Re:** **Summary of Soil Vapor Survey Data and Vapor Mitigation Plan for the 1514 Taylor Way Site**

This memorandum summarizes the results of soil vapor sampling performed at the 1514 Taylor Way redevelopment site (the Site) in Tacoma, Washington, and recommends next steps for mitigation and further evaluation. The sampling was performed in accordance with the approved Sampling Plan presented in Appendix B to the Interim Action Work Plan for the Site. That plan called for a methane survey and vapor intrusion (VI) assessment at the above development location. The methane survey and soil vapor sample collection for volatile organic compound (VOC) analysis were completed during multiple field events between December 2016 and May 2018 due to wet weather conditions that hampered efforts to complete the survey during one mobilization. Soil vapor survey locations are shown on Figure 1.

**VAPOR SURVEY FINDINGS**

The vapor survey on the two building pads (location 1 and locations 4 through 18) was performed using direct-push drilling methodology. Location 18 was originally in a construction drive aisle but was moved east approximately 30 feet to the edge of building pad A due to traffic safety concerns.

Groundwater is generally shallow at the Site (i.e., less than 2 feet below grade). Groundwater levels were measured prior to sampling by advancing closed rods at intended survey location and measuring the depth to water in the resultant borehole. Sampling points were then set at a depth of 5 feet below grade or 6 inches to 1 foot above the measured water table if water was encountered above 5 feet. Methane survey samples were collected via post-run tubing methodology and allowed to equilibrate for a minimum of 2 hours prior to sampling. VOC samples were collected via 8-inch-long temporary stainless steel vapor sample implants. Implants were allowed to equilibrate for a minimum of 8 hours prior to sampling, per email approval from the Washington State Department of Ecology (Ecology). All survey sample points installed via drilling were sealed using hydrated bentonite at time of installation. At each location, a minimum of three volumes of the annular space and tubing were purged using a peristaltic pump prior to sample collection.

The vapor survey in the drive aisle between the two building pads (locations 19, 20, and 21) could not be completed via drilling because groundwater was encountered at a depth less than 2 feet below grade. Therefore, the survey in the drive aisle was performed by placing a bucket at the ground surface and sealing the base of the bucket and inlet for sample tubing with plumbers' putty. The concentration of accumulated methane was measured at 30-minute intervals for a minimum equilibration time of 2 hours. Location 19 in the drive aisle was moved northeast approximately 30 feet due to heavy vehicle and equipment traffic during construction on this portion of the Site.

The methane survey was performed using a Landtec GEM 2000 landfill gas meter. Methane concentrations were measured while purging with a peristaltic pump until the reading stabilized. Methane percentages measured in soil vapor ranged from 0.0% to 1.4%. The greatest methane detections were 0.6% and 1.4%, measured on building pad A at location 10 and location 3, respectively. Methane survey results are shown on Figure 1.

A helium leak detection test for the methane survey methodology was performed during the February 2018 event. No helium was detected at the sample outlet.

Soil vapor at the methane survey locations was also screened for VOCs using a photoionization detector (PID), and concentrations were low-level, ranging from 0.0 to 0.6 parts per million vapor (ppmv).

Samples for VOC analysis were collected at locations 9, 12, and 16 during two events, the first in mid-April 2018 (locations 9 and 12) and the second in mid-May 2018 (locations 9 and 16). In a deviation from the work plan, location 12 was targeted for VOC sampling instead of location 13 because a usable vapor implant was installed at the adjacent location 12 during the February 2018 event. In addition, a second sample from location 9 was collected during the May event to verify April results.

VOC samples were collected using laboratory-supplied 1-liter evacuated SUMMA canisters. Helium leak detection was performed on samples collected at location 9 and location 12 during the April 2018 event, and helium concentrations measured in the sample canisters did not exceed 10 percent of the helium shroud concentrations. PID readings at the VOC sample locations ranged from 0.0 to 1.3 ppmv (location 9). An ambient air sample was also collected using an evacuated SUMMA canister placed at building pad A during the May 2018 sampling event.

Vapor samples were analyzed for VOCs and air-phase hydrocarbons (APHs) in accordance with the Interim Action Work Plan. A summary of results is shown in Table 1. Lab reports and field collection forms are in Attachment 1. Detected concentrations are compared to the Model Toxics Control Act (MTCA) Method C industrial screening levels for sub-slab soil vapor. At location 9 on building pad A, the chloroform concentration in the May 2018 sample collected exceeded the MTCA Method C cancer screening level. None of the target analytes were detected at concentrations exceeding their screening levels at location 12 or in the ambient air sample. At location 16 on building pad B, concentrations of APHs, acetaldehyde, benzene, chloroform, and

naphthalene exceeded their respective cancer or non-cancer screening levels. However, the sample at location 16 was delivered to the lab with excessive vacuum and therefore low sample volume as a consequence of the presence of excessive soil moisture within the pad B backfill; residual moisture in the vapor sample have caused a bias to high concentrations.

**VAPOR MITIGATION CONSTRUCTION**

As a consequence of the presence of multiple VOCs in the soil gas samples, some at concentrations exceeding appropriate screening levels, Avenue 55 elected to install a passive vapor mitigation system in Building A, specifically under each of the two office "node" locations of this large industrial warehouse currently under construction, as well as under each of the two office nodes planned for Building B. The office areas were selected for vapor mitigation because they are areas of higher occupancy and much more limited interior volume, so they have a higher potential for vapor intrusion exposure. The remaining warehouse spaces have extremely large interior volumes (Building A covers 3 acres and is 30 feet high; Building B is 1 acre and of a similar height) and so may or may not need to have a vapor mitigation system. A decision to implement either passive or active vapor mitigation in the warehouse interiors will be made after submittal of a supplement work plan to Ecology to collect additional indoor air and sub-slab vapor data to better evaluate the risk of vapor intrusion to the warehouse space of both buildings.

The passive system under the office nodes was designed by Herrera Environmental Consultants. The vapor mitigation plans for the passive system are included in Attachment 2. The system includes perforated PVC piping laid in trenches under the subgrade of the office area and covered with a 30 millimeter PVC membrane under the concrete floor. The PVC piping subgrade is tied to vertical vents to be run up the side of the building. The vertical vents allow the addition of an in-line blower if necessary based on future monitoring results and also allow the collection of samples to evaluate soil gas conditions under the membrane. The addition of an in-line blower would then convert the system from one relying on passive ventilation driven by atmospheric pressure differentials to an active system that maintains a negative pressure under the floor slab.

To date, Herrera has performed two inspections of the installation of the office node vapor mitigation system under construction in Building A. The first inspection was to observe the installation of the perforated piping, and the next to document the construction of the membrane prior to the floor slab being poured. Those field inspection reports are included in Attachment 2.

**LIST OF ATTACHMENTS**

| | |
|---|---|
| Table 1 | Summary of Soil Gas Data for Taylor Way Property |
| Figure 1 | Vapor Survey Sample Locations and Methane Results |
| Attachment 1 | Lab Report and Field Form |
| Attachment 2 | Vapor Mitigation Plans and Field Inspection Reports |

**Table**

**Table 1**
**Summary of Soil Gas Data for Taylor Way Property**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | Loc 9 | Loc 12 | Ambient | Loc 9 | Loc 109[1] | Loc 16 |
| | | | | Sample Location | Building A | Building A | Ambient | Building A | Building A | Building B |
| | | | | Sample Date | 4/18/2018 | 4/18/2018 | 5/8/2018 | 5/8/2018 | 5/8/2018 | 5/8/2018 |
| Analyte | CAS No. | Units | Sub Slab Method C Non Cancer | Sub Slab Method C Cancer | | | | | | |
| **Volatiles by MA-APH** | | | | | | | | | | |
| APH EC5-8 aliphatics | -- | µg/m³ | 200,000 | -- | 1,500 | 2,200 | 63 | 3,100 ve | 3,500 ve | 24,000 ve |
| APH EC9-12 aliphatics | -- | µg/m³ | 10,000 | -- | 510 | 380 | 35 U | 1,600 | 2,600 | **24,000 ve** |
| **Volatiles by TO-15** | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | µg/m³ | 170,000 | -- | 24 | 13 | 0.55 U | 44 | 45 | 2.2 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | µg/m³ | -- | 14 | 1.4 U | 1.4 U | 0.14 U | 0.21 U | 0.21 U | 2.1 |
| 1,1-Dichloroethane | 75-34-3 | µg/m³ | -- | 520 | 4 U | 5 | 0.4 U | 2.1 | 2.1 | 1.6 U |
| 1,1-Dichloroethene | -- | µg/m³ | -- | -- | 4 U | 4 U | 0.4 U | 0.76 | 0.76 | 1.6 U |
| 1,2,3-Trimethylbenzene | -- | µg/m³ | -- | -- | 25 U | 25 U | 2.5 U | 3.7 U | 7.3 | 66 |
| 1,2,4-Trimethylbenzene | 95-63-6 | µg/m³ | 230 | -- | 25 U | 25 U | 2.5 U | 6.4 | 13 | 120 |
| 1,2-Dibromoethane (EDB) | -- | µg/m³ | -- | -- | 0.77 U | 0.77 U | 0.077 U | 0.12 U | 0.12 U | 0.77 fb |
| 1,2-Dichloroethane (EDC) | 107-06-2 | µg/m³ | 230 | 32 | 0.73 | 0.97 | 0.097 | 2.3 | 2.3 | 0.79 |
| 1,2-Dichloropropane | 78-87-5 | µg/m³ | 130 | 83 | 2.3 U | 2.3 U | 0.23 U | 2.9 | 2.8 | 0.92 U |
| 1,3,5-Trimethylbenzene | -- | µg/m³ | -- | -- | 25 U | 25 U | 2.5 U | 5.4 | 9.2 | 69 |
| 1,3-Butadiene | 106-99-0 | µg/m³ | 67 | 28 | 0.22 U | 0.22 U | 0.046 | 0.033 U | 0.033 U | 0.088 U |
| 1,3-Dichlorobenzene | 541-73-1 | µg/m³ | -- | -- | 25 | 6 U | 0.6 U | 2.6 | 1.2 | 11 |
| 1,4-Dichlorobenzene | 106-46-7 | µg/m³ | 27,000 | 76 | 2.4 U | 2.4 U | 0.24 U | 0.36 U | 0.36 U | 1.6 fb |
| 2-Butanone (MEK) | -- | µg/m³ | -- | -- | 29 U | 29 U | 2.9 U | 6.5 | 7.2 | 65 |
| 2-Propanol | -- | µg/m³ | -- | -- | 86 U | 86 U | 8.6 U | 13 U | 13 U | 290 |
| Acetaldehyde | 75-07-0 | µg/m³ | 300 | 380 | 90 U | 90 U | 9 U | 52 | 62 | **330** |
| Acetone | 67-64-1 | µg/m³ | -- | -- | 48 U | 190 | 8.9 | 110 | 110 | 290 |
| Benzene | 71-43-2 | µg/m³ | 1,000 | 110 | 15 | 5.9 | 0.39 | 38 | 38 | **270** |
| Bromomethane | 74-83-9 | µg/m³ | 170 | -- | 3.9 U | 3.9 U | 0.98 | 1.2 U | 1.2 U | 3.2 U |
| Butanal | -- | µg/m³ | -- | -- | 29 U | 29 U | 2.9 U | 5.6 | 4.4 U | 12 U |
| Carbon disulfide | 75-15-0 | µg/m³ | 23,000 | -- | 62 U | 62 U | 6.2 U | 24 | 23 | 970 ve |
| Chlorobenzene | 108-90-7 | µg/m³ | 1,700 | -- | 4.6 U | 4.6 U | 0.46 U | 0.69 U | 0.69 U | 2.2 |
| Chlorodifluoromethane | 75-45-6 | µg/m³ | 1,700,000 | -- | 3.5 U | 3.5 U | 1.0 | 0.53 U | 0.53 U | 1.4 U |
| Chloroethane | -- | µg/m³ | -- | -- | 2.6 U | 2.6 U | 0.26 U | 1.4 | 1.4 | 1.2 |
| Chloroform | 67-66-3 | µg/m³ | 3,300 | 36 | 3.1 | 2.5 | 0.17 | **340** | **310** | **2,700 ve** |
| Chloromethane | 74-87-3 | µg/m³ | 3,000 | -- | 9.9 | 8.5 | 1.3 | 12 | 12 | 12 |
| cis-1,2-Dichloroethene | -- | µg/m³ | -- | -- | 4 U | 4 U | 0.4 U | 0.59 U | 0.59 U | 7.5 |
| Cyclohexane | -- | µg/m³ | -- | -- | 69 U | 69 U | 6.9 U | 24 | 22 | 380 |
| Cyclopentane | 287-92-3 | µg/m³ | -- | -- | 15 | 61 | 0.29 U | 14 | 15 | 110 |

**Table 1**
**Summary of Soil Gas Data for Taylor Way Property**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | Loc 9 | Loc 12 | Ambient | Loc 9 | Loc 109[1] | Loc 16 |
| | | | | Sample Location | Building A | Building A | Ambient | Building A | Building A | Building B |
| | | | | Sample Date | 4/18/2018 | 4/18/2018 | 5/8/2018 | 5/8/2018 | 5/8/2018 | 5/8/2018 |
| Analyte | CAS No. | Units | Sub Slab Method C Non Cancer | Sub Slab Method C Cancer | | | | | | |
| **Volatiles by TO-15 (cont.)** | | | | | | | | | | |
| Dibromochloromethane | 124-48-1 | µg/m³ | -- | 31 | 0.85 U | 0.85 U | 0.085 U | 0.13 U | 0.13 U | 0.99 |
| Dichlorodifluoromethane | 75-71-8 | µg/m³ | 3,300 | -- | 200 | 490 | 2.8 | 76 | 87 | 2.8 |
| Ethanol | -- | µg/m³ | -- | -- | 75 U | 75 U | 7.5 U | 11 U | 11 U | 100 |
| Ethylbenzene | 100-41-4 | µg/m³ | 33,000 | -- | 4.3 U | 4.3 U | 0.43 U | 12 | 15 | 62 |
| Hexachlorobutadiene | 87-68-3 | µg/m³ | -- | 38 | 2.1 U | 2.1 U | 0.21 U | 0.32 U | 0.32 U | 2.9 |
| Hexanal | -- | µg/m³ | -- | -- | 41 U | 41 U | 4.1 U | 6.6 | 6.2 | 76 |
| Hexane | 110-54-3 | µg/m³ | 23,000 | -- | 43 | 49 | 3.5 U | 93 | 78 | 680 |
| Isobutene | 115-11-7 | µg/m³ | -- | -- | 440 | 540 | 0.92 U | 480 ve | 520 ve | 2,100 ve |
| Isoprene | 78-79-5 | µg/m³ | -- | -- | 2.8 U | 7 | 0.28 U | 11 | 11 | 69 |
| m,p-Xylene | -- | µg/m³ | -- | -- | 8.7 U | 8.7 U | 0.87 U | 28 | 40 | 200 |
| Naphthalene | 91-20-3 | µg/m³ | 100 | 25 | 1 U | 1 U | 0.16 fb | 0.79 | 1.9 | **65** |
| o-Xylene | 95-47-6 | µg/m³ | 3,300 | -- | 4.3 U | 4.3 U | 0.43 U | 11 | 15 | 84 |
| Pentane | 109-66-0 | µg/m³ | -- | -- | 150 | 270 | 3 U | 210 | 210 | 890 ve |
| Propene | 115-07-1 | µg/m³ | -- | -- | 770 | 1,700 ve | 1.7 U | 670 ve | 870 ve | 2,100 ve |
| Styrene | 100-42-5 | µg/m³ | 33,000 | -- | 8.5 U | 8.5 U | 0.85 U | 2.1 | 3.6 | 13 |
| Tetrachloroethene | 127-18-4 | µg/m³ | 1,333 | 3,205 | 6.8 U | 6.8 U | 0.68 U | 3.5 | 4.0 | 3.1 |
| Toluene | 108-88-3 | µg/m³ | 170,000 | -- | 14 | 5.2 | 1.0 | 43 | 45 | 510 |
| trans-1,2-Dichloroethene | -- | µg/m³ | -- | -- | 4 U | 4 U | 0.4 U | 0.59 U | 0.59 U | 2.0 |
| Trichloroethene | 79-01-6 | µg/m³ | 67 | 210 | 2.7 U | 6.1 | 0.27 U | 0.61 | 0.58 | 2.5 |
| Trichlorofluoromethane | 75-69-4 | µg/m³ | 23,000 | -- | 470 | 180 | 1.4 | 730 ve | 710 ve | 5.4 |
| Vinyl chloride | 75-01-4 | µg/m³ | 3,300 | 93 | 2.6 U | 2.6 U | 0.26 U | 0.38 U | 0.38 U | 8.9 |

Notes:

-- Not applicable.

**RED** Detected concentration that exceeds criteria.

1 Loc 109 is a field duplicate of Loc 9 collected on 5/8/2018.

Abbreviations:

CAS Chemical Abstracts Service

µg/m³ Micrograms per cubic meter

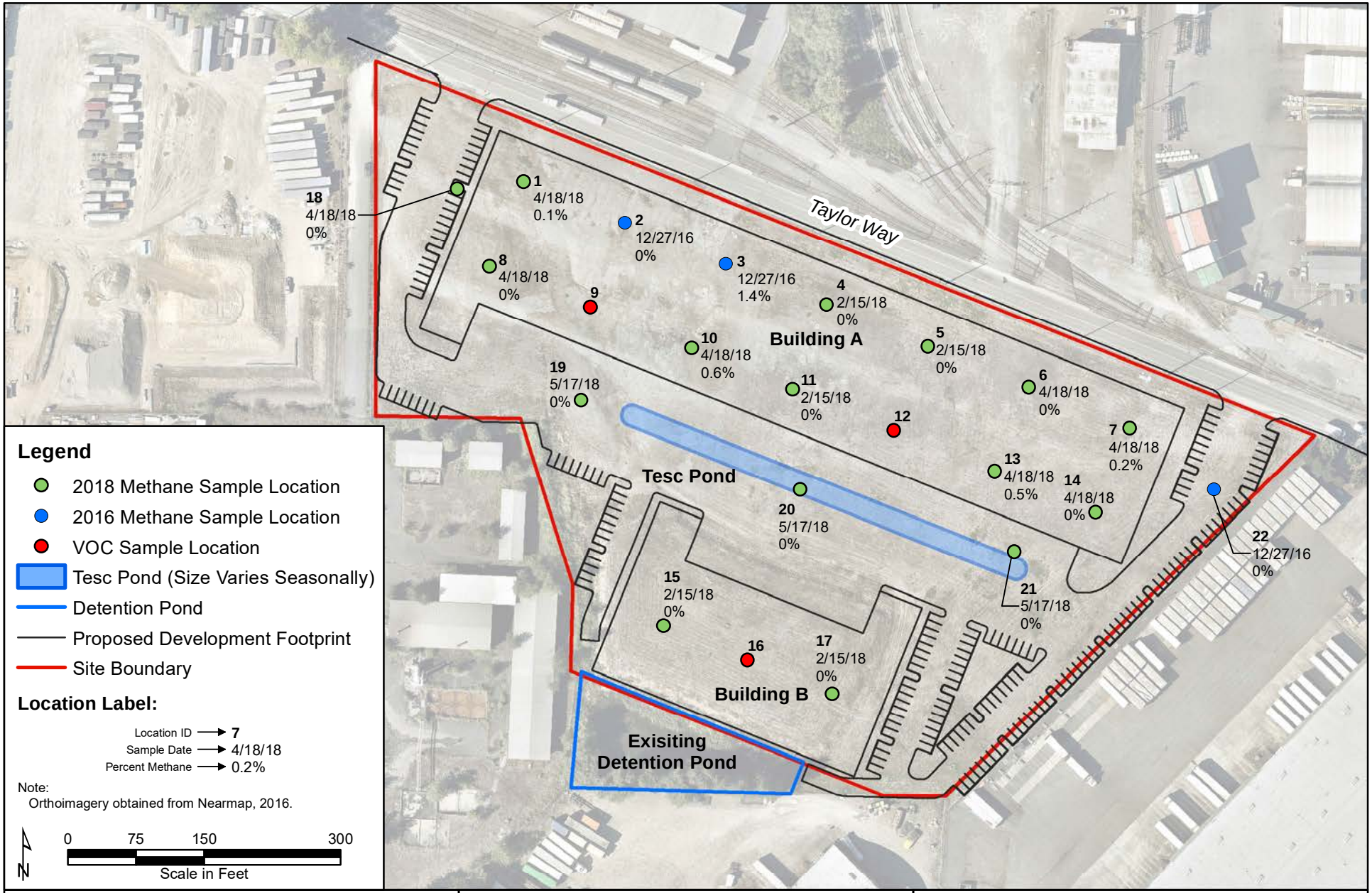
Qualifiers:

fb The analyte was detected in the method blank.

U The analyte was not detected at the given reporting limit.

ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

**Figure**

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**Summary of Soil Vapor Survey Data and Vapor Mitigation Plan for the 1514 Taylor Way Site**
**1514 Taylor Way Development**
**Tacoma, Washington**

Figure 1
Vapor Survey Sample Locations and Methane Results

I:\GIS\Projects\Ave55-TaylorWay\MXD\Vapor Survey Results\Figure 1 Vapor Survey Sample Locations and Methane Results.mxd
6/7/2018

**Attachment 1**
**Lab Report and Field Form**

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## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Ambient | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-01 |
| Date Analyzed: | 05/14/18 | Data File: | 051416.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 79 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 63 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

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## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 09 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-02 1/1.5 |
| Date Analyzed: | 05/14/18 | Data File: | 051417.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,100 ve |
| APH EC9-12 aliphatics | 1,600 |
| APH EC9-10 aromatics | <37 |

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## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 109 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-03 1/1.5 |
| Date Analyzed: | 05/15/18 | Data File: | 051418.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 107 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,500 ve |
| APH EC9-12 aliphatics | 2,600 |
| APH EC9-10 aromatics | <37 |

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## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 16 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-04 1/4 |
| Date Analyzed: | 05/15/18 | Data File: | 051419.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 24,000 ve |
| APH EC9-12 aliphatics | 24,000 ve |
| APH EC9-10 aromatics | <100 |

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## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/14/18 | Lab ID: | 08-1000 mb |
| Date Analyzed: | 05/14/18 | Data File: | 051406.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 80 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

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## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Ambient | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-01 |
| Date Analyzed: | 05/14/18 | Data File: | 051416.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.0 | 0.29 | 1-Butanol | <6.1 | <2 |
| Propene | <1.7 | <1 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | 2.8 | 0.57 | Benzene | 0.39 | 0.12 |
| Chloromethane | 1.3 | 0.64 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | 0.046 | 0.021 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | 0.98 | 0.25 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | 1.0 | 0.27 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | 1.4 | 0.25 | 3-Hexanone | <4.1 | <1 |
| Acetone | 8.9 | 3.8 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 ca | <25 ca | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | 0.17 | 0.034 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | 0.097 | 0.024 | Naphthalene | 0.16 fb | 0.031 fb |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

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## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 09 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-02 1/1.5 |
| Date Analyzed: | 05/14/18 | Data File: | 051417.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 115 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.53 | <0.15 | 1-Butanol | <9.1 | <3 |
| Propene | 670 ve | 390 ve | Carbon tetrachloride | <0.94 | <0.15 |
| Dichlorodifluoromethane | 76 | 15 | Benzene | 38 | 12 |
| Chloromethane | 12 | 5.8 | Cyclohexane | 24 | 6.9 |
| F-114 | <1 | <0.15 | 2-Pentanone | <5.3 | <1.5 |
| Isobutene | 480 ve | 210 ve | 3-Pentanone | <5.3 | <1.5 |
| Acetaldehyde | 52 | 29 | Pentanal | <5.3 | <1.5 |
| Vinyl chloride | <0.38 | <0.15 | 1,2-Dichloropropane | 2.9 | 0.62 |
| 1,3-Butadiene | <0.033 | <0.015 | 1,4-Dioxane | <0.54 | <0.15 |
| Bromomethane | <1.2 | <0.3 | Bromodichloromethane | <0.1 | <0.015 |
| Chloroethane | 1.4 | 0.53 | Trichloroethene | 0.61 | 0.11 |
| Ethanol | <11 | <6 | cis-1,3-Dichloropropene | <0.68 | <0.15 |
| Acetonitrile | <2.5 | <1.5 | 4-Methyl-2-pentanone | <6.1 | <1.5 |
| Acrolein | <1.4 | <0.6 | trans-1,3-Dichloropropene | <0.68 | <0.15 |
| Acrylonitrile | <0.33 | <0.15 | Toluene | 43 | 11 |
| Pentane | 210 | 71 | 1,1,2-Trichloroethane | <0.082 | <0.015 |
| Trichlorofluoromethane | 730 ve | 130 ve | 3-Hexanone | <6.1 | <1.5 |
| Acetone | 110 | 48 | 2-Hexanone | <6.1 | <1.5 |
| 2-Propanol | <13 | <5.2 | Hexanal | 6.6 | 1.6 |
| Isoprene | 11 | 3.8 | Tetrachloroethene | 3.5 | 0.51 |
| Iodomethane | <0.87 | <0.15 | Dibromochloromethane | <0.13 | <0.015 |
| 1,1-Dichloroethene | 0.76 | 0.19 | 1,2-Dibromoethane (EDB) | <0.12 | <0.015 |
| Methacrolein | <4.3 | <1.5 | Chlorobenzene | <0.69 | <0.15 |
| trans-1,2-Dichloroethene | <0.59 | <0.15 | Ethylbenzene | 12 | 2.7 |
| Cyclopentane | 14 | 5.0 | 1,1,2,2-Tetrachloroethane | <0.21 | <0.03 |
| Methyl vinyl ketone | <4.3 | <1.5 | m,p-Xylene | 28 | 6.5 |
| Butanal | 5.6 | 1.9 | o-Xylene | 11 | 2.5 |
| Methylene chloride | <130 ca | <37 ca | Styrene | 2.1 | 0.49 |
| CFC-113 | <1.1 | <0.15 | Bromoform | <3.1 | <0.3 |
| Carbon disulfide | 24 | 7.7 | Benzyl chloride | <0.078 | <0.015 |
| Methyl t-butyl ether (MTBE) | <2.7 | <0.75 | 1,3,5-Trimethylbenzene | 5.4 | 1.1 |
| Vinyl acetate | <11 | <3 | 1,2,4-Trimethylbenzene | 6.4 | 1.3 |
| 1,1-Dichloroethane | 2.1 | 0.52 | 1,3-Dichlorobenzene | 2.6 | 0.43 |
| cis-1,2-Dichloroethene | <0.59 | <0.15 | 1,4-Dichlorobenzene | <0.36 | <0.06 |
| Hexane | 93 | 26 | 1,2,3-Trimethylbenzene | <3.7 | <0.75 |
| Chloroform | 340 | 69 | 1,2-Dichlorobenzene | <0.9 | <0.15 |
| 2-Butanone (MEK) | 6.5 | 2.2 | 1,2,4-Trichlorobenzene | <1.1 | <0.15 |
| 1,2-Dichloroethane (EDC) | 2.3 | 0.58 | Naphthalene | 0.79 | 0.15 |
| 1,1,1-Trichloroethane | 44 | 8.1 | Hexachlorobutadiene | <0.32 | <0.03 |

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## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 109 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-03 1/1.5 |
| Date Analyzed: | 05/15/18 | Data File: | 051418.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 127 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.53 | <0.15 | 1-Butanol | <9.1 | <3 |
| Propene | 870 ve | 500 ve | Carbon tetrachloride | <0.94 | <0.15 |
| Dichlorodifluoromethane | 87 | 18 | Benzene | 38 | 12 |
| Chloromethane | 12 | 5.8 | Cyclohexane | 22 | 6.5 |
| F-114 | <1 | <0.15 | 2-Pentanone | <5.3 | <1.5 |
| Isobutene | 520 ve | 230 ve | 3-Pentanone | <5.3 | <1.5 |
| Acetaldehyde | 62 | 34 | Pentanal | <5.3 | <1.5 |
| Vinyl chloride | <0.38 | <0.15 | 1,2-Dichloropropane | 2.8 | 0.60 |
| 1,3-Butadiene | <0.033 | <0.015 | 1,4-Dioxane | <0.54 | <0.15 |
| Bromomethane | <1.2 | <0.3 | Bromodichloromethane | <0.1 | <0.015 |
| Chloroethane | 1.4 | 0.53 | Trichloroethene | 0.58 | 0.11 |
| Ethanol | <11 | <6 | cis-1,3-Dichloropropene | <0.68 | <0.15 |
| Acetonitrile | <2.5 | <1.5 | 4-Methyl-2-pentanone | <6.1 | <1.5 |
| Acrolein | <1.4 | <0.6 | trans-1,3-Dichloropropene | <0.68 | <0.15 |
| Acrylonitrile | <0.33 | <0.15 | Toluene | 45 | 12 |
| Pentane | 210 | 72 | 1,1,2-Trichloroethane | <0.082 | <0.015 |
| Trichlorofluoromethane | 710 ve | 130 ve | 3-Hexanone | <6.1 | <1.5 |
| Acetone | 110 | 46 | 2-Hexanone | <6.1 | <1.5 |
| 2-Propanol | <13 | <5.2 | Hexanal | 6.2 | 1.5 |
| Isoprene | 11 | 3.9 | Tetrachloroethene | 4.0 | 0.58 |
| Iodomethane | <0.87 | <0.15 | Dibromochloromethane | <0.13 | <0.015 |
| 1,1-Dichloroethene | 0.76 | 0.19 | 1,2-Dibromoethane (EDB) | <0.12 | <0.015 |
| Methacrolein | <4.3 | <1.5 | Chlorobenzene | <0.69 | <0.15 |
| trans-1,2-Dichloroethene | <0.59 | <0.15 | Ethylbenzene | 15 | 3.4 |
| Cyclopentane | 15 | 5.3 | 1,1,2,2-Tetrachloroethane | <0.21 | <0.03 |
| Methyl vinyl ketone | <4.3 | <1.5 | m,p-Xylene | 40 | 9.2 |
| Butanal | <4.4 | <1.5 | o-Xylene | 15 | 3.4 |
| Methylene chloride | <130 ca | <37 ca | Styrene | 3.6 | 0.83 |
| CFC-113 | <1.1 | <0.15 | Bromoform | <3.1 | <0.3 |
| Carbon disulfide | 23 | 7.5 | Benzyl chloride | <0.078 | <0.015 |
| Methyl t-butyl ether (MTBE) | <2.7 | <0.75 | 1,3,5-Trimethylbenzene | 9.2 | 1.9 |
| Vinyl acetate | <11 | <3 | 1,2,4-Trimethylbenzene | 13 | 2.7 |
| 1,1-Dichloroethane | 2.1 | 0.51 | 1,3-Dichlorobenzene | 1.2 | 0.19 |
| cis-1,2-Dichloroethene | <0.59 | <0.15 | 1,4-Dichlorobenzene | <0.36 | <0.06 |
| Hexane | 78 | 22 | 1,2,3-Trimethylbenzene | 7.3 | 1.5 |
| Chloroform | 310 | 64 | 1,2-Dichlorobenzene | <0.9 | <0.15 |
| 2-Butanone (MEK) | 7.2 | 2.4 | 1,2,4-Trichlorobenzene | <1.1 | <0.15 |
| 1,2-Dichloroethane (EDC) | 2.3 | 0.57 | Naphthalene | 1.9 | 0.37 |
| 1,1,1-Trichloroethane | 45 | 8.2 | Hexachlorobutadiene | <0.32 | <0.03 |

DRAFT

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 16 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-04 1/4 |
| Date Analyzed: | 05/15/18 | Data File: | 051419.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 121 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.4 | <0.4 | 1-Butanol | <24 | <8 |
| Propene | 3,100 ve | 1,800 ve | Carbon tetrachloride | <2.5 | <0.4 |
| Dichlorodifluoromethane | 2.8 | 0.56 | Benzene | 270 | 85 |
| Chloromethane | 12 | 5.6 | Cyclohexane | 380 | 110 |
| F-114 | <2.8 | <0.4 | 2-Pentanone | <14 | <4 |
| Isobutene | 2,100 ve | 910 ve | 3-Pentanone | <14 | <4 |
| Acetaldehyde | 330 | 180 | Pentanal | <14 | <4 |
| Vinyl chloride | 8.9 | 3.5 | 1,2-Dichloropropane | <0.92 | <0.2 |
| 1,3-Butadiene | <0.088 | <0.04 | 1,4-Dioxane | <1.4 | <0.4 |
| Bromomethane | <3.2 | <0.8 | Bromodichloromethane | <0.27 | <0.04 |
| Chloroethane | 1.2 | 0.44 | Trichloroethene | 2.5 | 0.47 |
| Ethanol | 100 | 53 | cis-1,3-Dichloropropene | <1.8 | <0.4 |
| Acetonitrile | <6.7 | <4 | 4-Methyl-2-pentanone | <16 | <4 |
| Acrolein | <3.7 | <1.6 | trans-1,3-Dichloropropene | <1.8 | <0.4 |
| Acrylonitrile | <0.87 | <0.4 | Toluene | 510 | 140 |
| Pentane | 890 ve | 300 ve | 1,1,2-Trichloroethane | <0.22 | <0.04 |
| Trichlorofluoromethane | 5.4 | 0.97 | 3-Hexanone | <16 | <4 |
| Acetone | 290 | 120 | 2-Hexanone | <16 | <4 |
| 2-Propanol | 290 | 120 | Hexanal | 76 | 19 |
| Isoprene | 69 | 25 | Tetrachloroethene | 3.1 | 0.46 |
| Iodomethane | <2.3 | <0.4 | Dibromochloromethane | 0.99 | 0.12 |
| 1,1-Dichloroethene | <1.6 | <0.4 | 1,2-Dibromoethane (EDB) | 0.77 fb | 0.10 fb |
| Methacrolein | <11 | <4 | Chlorobenzene | 2.2 | 0.49 |
| trans-1,2-Dichloroethene | 2.0 | 0.49 | Ethylbenzene | 62 | 14 |
| Cyclopentane | 110 | 39 | 1,1,2,2-Tetrachloroethane | 2.1 | 0.30 |
| Methyl vinyl ketone | <11 | <4 | m,p-Xylene | 200 | 46 |
| Butanal | <12 | <4 | o-Xylene | 84 | 19 |
| Methylene chloride | <350 ca | <100 ca | Styrene | 13 | 3.0 |
| CFC-113 | <3.1 | <0.4 | Bromoform | <8.3 | <0.8 |
| Carbon disulfide | 970 ve | 310 ve | Benzyl chloride | <0.21 | <0.04 |
| Methyl t-butyl ether (MTBE) | <7.2 | <2 | 1,3,5-Trimethylbenzene | 69 | 14 |
| Vinyl acetate | <28 | <8 | 1,2,4-Trimethylbenzene | 120 | 25 |
| 1,1-Dichloroethane | <1.6 | <0.4 | 1,3-Dichlorobenzene | 11 | 1.8 |
| cis-1,2-Dichloroethene | 7.5 | 1.9 | 1,4-Dichlorobenzene | 1.6 fb | 0.26 fb |
| Hexane | 680 | 190 | 1,2,3-Trimethylbenzene | 66 | 13 |
| Chloroform | 2,700 ve | 560 ve | 1,2-Dichlorobenzene | <2.4 | <0.4 |
| 2-Butanone (MEK) | 65 | 22 | 1,2,4-Trichlorobenzene | <3 | <0.4 |
| 1,2-Dichloroethane (EDC) | 0.79 | 0.20 | Naphthalene | 65 | 12 |
| 1,1,1-Trichloroethane | <2.2 | <0.4 | Hexachlorobutadiene | 2.9 | 0.28 |

DRAFT

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/14/18 | Lab ID: | 08-1000 mb |
| Date Analyzed: | 05/14/18 | Data File: | 051406.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <1.7 | <1 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <0.78 | <0.2 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 ca | <25 ca | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.13 lc | 0.025 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

605181

# SAMPLE CHAIN OF CUSTODY

ME 05/10/18

Page # 1 of 1

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Arc 55 – Taylor Way

PO #

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | (see SAP) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AMBIENT | 01 | 29229 | 4hr | 5/8/18 | 30 | 0934 | 8 | 1254 | | | X | | no He detection |
| LOC 09 | 02 | ~~2435~~ 2436 | 109 | ↓ | 30 | 1133 | 3 | 1142 | | | X | | |
| LOC 109 | 03 | 3674 | 231 | | 30 | ~~1158~~ 1202 | 3 | 1209 | | | X | | |
| LOC 16 | 04 | ~~2436~~ 2435 | 111 | | 30 | 1220 | 21 | 1235 | | | X | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Samples received at 17 °C |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kristin Andrisan | F5 | 5/9/18 | 0930 |
| Received by: | Elizabeth Webber-Bz | F5BI | 5/10/18 | 1045 |
| Relinquished by: | | | | |
| Received by: | | | | |

*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.
Arina Podnozova, B.S.
Eric Young, B.S.

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

April 30, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on April 19, 2018 from the Ave 55 - Taylor Way, F&BI 804329 project. There are 13 pages included in this report.

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: Kristin Anderson
FDS0430R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 19, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55 - Taylor Way, F&BI 804329 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 804329 -01 | Loc 12 |
| 804329 -02 | Loc 16 |
| 804329 -03 | Loc 9 |

Water was present in sample Loc 16. The analysis was placed on hold.

The TO-15 propene concentration in sample Loc 12 exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329
Date Extracted: 04/27/18
Date Analyzed: 04/27/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| Loc 12<br>804329-01 | <0.6 |
| Loc 16<br>804329-03 | 1.1 |
| Method Blank | <0.6 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 12 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-01 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042510.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,200 |
| APH EC9-12 aliphatics | 380 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 9 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-03 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042511.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,500 |
| APH EC9-12 aliphatics | 510 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | Not Applicable | Lab ID: | 08-0846 mb |
| Date Analyzed: | 04/25/18 | Data File: | 042509.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 12 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-01 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042510.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <3.5 | <1 | 1-Butanol | <61 | <20 |
| Propene | 1,700 ve | 1,000 ve | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 490 | 100 | Benzene | 5.9 | 1.8 |
| Chloromethane | 8.5 | 4.1 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 540 | 240 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | <0.22 | <0.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <3.9 | <1 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | 6.1 | 1.1 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 5.2 | 1.4 |
| Pentane | 270 | 92 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | 180 | 32 | 3-Hexanone | <41 | <10 |
| Acetone | 190 | 79 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 7.0 | 2.5 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | 61 | 21 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | 5.0 | 1.2 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 49 | 14 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | 2.5 | 0.52 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 0.97 | 0.24 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | 13 | 2.4 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 9 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-03 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042511.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <3.5 | <1 | 1-Butanol | <61 | <20 |
| Propene | 770 | 450 | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 200 | 40 | Benzene | 15 | 4.8 |
| Chloromethane | 9.9 | 4.8 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 440 | 190 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | <0.22 | <0.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <3.9 | <1 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | <2.7 | <0.5 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 14 | 3.7 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | 470 | 83 | 3-Hexanone | <41 | <10 |
| Acetone | <48 | <20 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | <2.8 | <1 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | 15 | 5.4 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | <4 | <1 | 1,3-Dichlorobenzene | 25 | 4.1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 43 | 12 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | 3.1 | 0.63 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 0.73 | 0.18 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | 24 | 4.5 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | Not Applicable | Lab ID: | 08-0846 mb |
| Date Analyzed: | 04/25/18 | Data File: | 042509.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <0.39 | <0.1 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | <0.1 | <0.02 |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 804329-03 (Duplicate)

| Analyte | Sample Result (%) | Duplicate Result (%) | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|
| Helium | 1.1 | <0.6 | nm | 0-50 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: 804329-03 1/10 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 25) |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 1,500 | 1,700 | 12 |
| APH EC9-12 aliphatics | ug/m3 | 510 | 550 | 8 |
| APH EC9-10 aromatics | ug/m3 | <250 | <250 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 230 | 74 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 350 | 97 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 251 | 80 | 70-130 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 10 | 98 | 70-130 |
| Propene | ppbv | 10 | 88 | 70-130 |
| Dichlorodifluoromethane | ppbv | 10 | 98 | 70-130 |
| Chloromethane | ppbv | 10 | 104 | 70-130 |
| F-114 | ppbv | 10 | 103 | 70-130 |
| Isobutene | ppbv | 10 | 100 | 70-130 |
| Acetaldehyde | ppbv | 10 | 97 | 70-130 |
| Vinyl chloride | ppbv | 10 | 106 | 70-130 |
| 1,3-Butadiene | ppbv | 10 | 104 | 70-130 |
| Bromomethane | ppbv | 10 | 129 | 70-130 |
| Chloroethane | ppbv | 10 | 105 | 70-130 |
| Ethanol | ppbv | 10 | 97 | 70-130 |
| Acetonitrile | ppbv | 10 | 106 | 70-130 |
| Acrolein | ppbv | 10 | 98 | 70-130 |
| Acrylonitrile | ppbv | 10 | 98 | 70-130 |
| Pentane | ppbv | 10 | 93 | 70-130 |
| Trichlorofluoromethane | ppbv | 10 | 90 | 70-130 |
| Acetone | ppbv | 10 | 93 | 70-130 |
| 2-Propanol | ppbv | 10 | 82 | 70-130 |
| Isoprene | ppbv | 10 | 95 | 70-130 |
| Iodomethane | ppbv | 10 | 93 | 70-130 |
| 1,1-Dichloroethene | ppbv | 10 | 100 | 70-130 |
| Methacrolein | ppbv | 10 | 95 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 10 | 100 | 70-130 |
| Cyclopentane | ppbv | 10 | 99 | 70-130 |
| Methyl Vinyl Ketone | ppbv | 10 | 99 | 70-130 |
| Butanal | ppbv | 10 | 96 | 70-130 |
| Methylene chloride | ppbv | 10 | 87 | 70-130 |
| CFC-113 | ppbv | 10 | 96 | 70-130 |
| Carbon disulfide | ppbv | 10 | 93 | 70-130 |
| Methyl t-butyl ether | ppbv | 10 | 89 | 70-130 |
| Vinyl acetate | ppbv | 10 | 77 | 70-130 |
| 1,1-Dichloroethane | ppbv | 10 | 101 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 10 | 101 | 70-130 |
| Hexane | ppbv | 10 | 93 | 70-130 |
| Chloroform | ppbv | 10 | 103 | 70-130 |
| 2-Butanone (MEK) | ppbv | 10 | 96 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 10 | 100 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 10 | 95 | 70-130 |
| 1-Butanol | ppbv | 10 | 84 | 70-130 |
| Carbon tetrachloride | ppbv | 10 | 89 | 70-130 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (Continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ppbv | 10 | 103 | 70-130 |
| Cyclohexane | ppbv | 10 | 95 | 70-130 |
| 2-Pentanone | ppbv | 10 | 95 | 70-130 |
| 3-Pentanone | ppbv | 10 | 106 | 70-130 |
| Pentanal | ppbv | 10 | 97 | 70-130 |
| 1,2-Dichloropropane | ppbv | 10 | 105 | 70-130 |
| 1,4-Dioxane | ppbv | 10 | 87 | 70-130 |
| Bromodichloromethane | ppbv | 10 | 104 | 70-130 |
| Trichloroethene | ppbv | 10 | 102 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 10 | 92 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 10 | 86 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 10 | 88 | 70-130 |
| Toluene | ppbv | 10 | 99 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 10 | 102 | 70-130 |
| 3-Hexanone | ppbv | 10 | 90 | 70-130 |
| 2-Hexanone | ppbv | 10 | 90 | 70-130 |
| Hexanal | ppbv | 10 | 93 | 70-130 |
| Tetrachloroethene | ppbv | 10 | 99 | 70-130 |
| Dibromochloromethane | ppbv | 10 | 105 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 10 | 103 | 70-130 |
| Chlorobenzene | ppbv | 10 | 98 | 70-130 |
| Ethylbenzene | ppbv | 10 | 100 | 70-130 |
| 1,1,2,2-Tetrachloroethane | ppbv | 10 | 103 | 70-130 |
| m,p-Xylene | ppbv | 20 | 101 | 70-130 |
| o-Xylene | ppbv | 10 | 103 | 70-130 |
| Styrene | ppbv | 10 | 98 | 70-130 |
| Bromoform | ppbv | 10 | 104 | 70-130 |
| Benzyl chloride | ppbv | 10 | 81 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 10 | 96 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 10 | 94 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 10 | 102 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 10 | 103 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 10 | 96 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 10 | 102 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 10 | 84 | 70-130 |
| Naphthalene | ppbv | 10 | 104 | 70-130 |
| Hexachlorobutadiene | ppbv | 10 | 97 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

804329

# SAMPLE CHAIN OF CUSTODY HE 04-19-18

Page # 1 of 1

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Arc 55 - Taylor Way

PO #:

REPORTING LEVEL
☐ Indoor Air ☒ Deep Soil Gas
☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO:

TURNAROUND TIME
☐ Standard
☒ RUSH 5-day
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | ~~Helium TO-15 BTEXN~~ | ~~Fac Ger TO-15 cVOCs~~ | APH's | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOC 12 | 01 | 2433 | 18 | 4/18/18 | 30 | 0924 | 2 | 0931 | | X | X | X | |
| LOC 16 | 02 | 3389 | 224 | 4/18/18 | 30 | 1621 | 15 | 1643 | | X | X | X | water msample pt - likely bad sample |
| LOC 9 | 03 | 3672 | 01 | 4/18/18 | 30 | 1651 | 2 | 1659 | | X | X | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | ~~Samples received at~~ 20°C |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

He detection for leaks

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kristin Andersen | FS | 4/19/18 | 0830 |
| Received by: | Eric Clow | FSB | 4/19/18 | 0830 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

**SOIL VAPOR SAMPLING SHEET**

Site Reference: Ave 55 - Taylor Way

Address: 1514 Taylor Way, Tacoma

Date: 4/18/2018 + 5/18/2018

Personnel: K Anderson

| | Soil Vapor Sampling Point ID | Vacuum Test: Time Start Vacuum Testing | Vacuum Test: Time Stop Vacuum Testing | Purging: Time Start Purging | Purging: Time Stop Purging | Purging: Purging Rate (ml/min) | Purging: Total Volume Purged (ml) | Helium: Time of Helium Reading | Helium: Helium Reading (%) | Sampling: Time Start Sampling | Sampling: Time Stop Sampling | Sampling: Canister Vacuum Before Sampling (in Hg) | Sampling: Canister Vacuum After Sampling (in Hg) | PID: Time of PID Reading | PID: PID Reading | Lab canister # ~~Notes~~ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/18 | LOC 12 | 4/17@2222 | 2222 | 0921 | 0924 | 167 | 500 | 0924 | 11.9% | 0924 | 0934 | 30 | 2 | 1042 | 0.0 | #2433 |
| 4/18 | LOC 16 | 4/17@2224 | 2224 | 1618 | 1621 | 167 | 500 | 1621 | 11.0% | 1621 | 1643 | 30 | 15 | 1618 | 0.1 | #3389 |
| 4/18 | LOC 9 | 4/17@2225 | 2235 | 1648 | 1651 | 167 | 500 | 1651 | 10.8% | 1651 | 1659 | 30 | 2 | 1649 | 0.5 | #3672 |
| | | | | | | | | | | | | | | | | |
| 5/18 | LOC 9 | 1100 | 1110 | 1129 | 1132 | 167 | 500 | — | — | 1133 | 1142 | 30 | 3 | 1132 | 1.2 | #2436 |
| 5/18 | LOC 9 dup | 1101 | 1111 | 1159 | 1202 | 167 | 500 | — | — | 1202 | 1209 | 30 | 3 | 1202 | 1.3 | #3674 |
| 5/18 | LOC 16 | 1059 | 1109 | 1217 | 1220 | 167 | 500 | — | — | 1220 | 1235 | 30 | 21 | 1220 | 0.4 | #2435 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

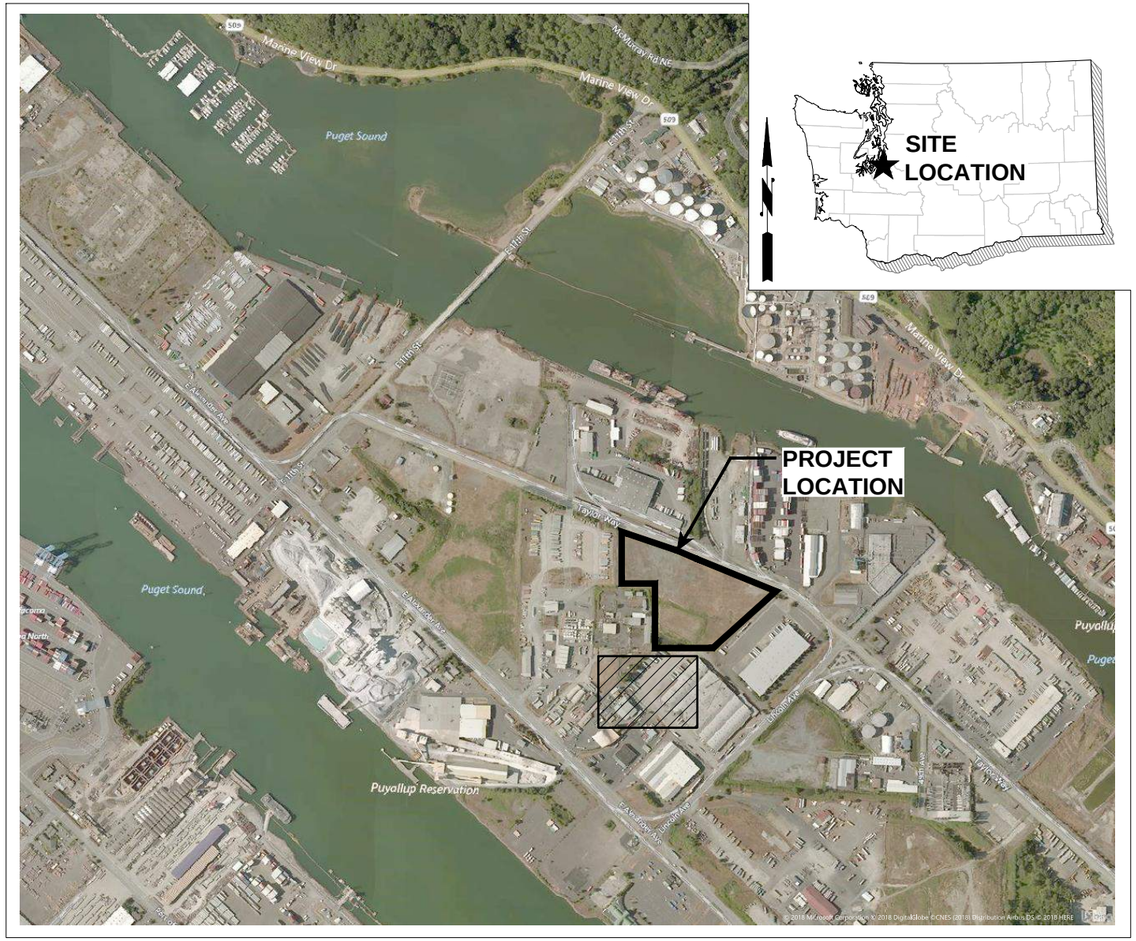
Notes:

1) purge time for 3x volumes 1-2 min. based on 5-10 ft tubing. ~~purged 3 min~~ purged total 3 min
2) encountered water at LOC 16 on 4/18. excessive vacuum @ sample loc + likely water in canister
3) He leak detection test passed on all samples coll. 4/18. per WP no leak test 5/18
4) excessive vacuum at LOC 16 on 5/18. low sample volume.
5) LOC 9 dup labeled LOC 109

**Attachment 2**
**Vapor Mitigation Plans and Field Inspection Reports**

# AVE 55 TAYLOR AVE METHANE MITIGATION PROJECT

TACOMA, WASHINGTON




VICINITY MAP

SCALE: N.T.S.




| SHEET INDEX | | |
|---|---|---|
| **SHEET NO.** | **DRAWING NO.** | **DESCRIPTION** |
| 1 | G-1 | COVER SHEET |
| 2 | G-2 | GENERAL NOTES |
| 3 | C-1 | BUILDING A |
| 4 | C-2 | NORTH WEST OFFICE AREA OF BUILDING A |
| 5 | C-3 | NORTH EAST OFFICE AREA OF BUILDING A |
| 6 | C-4 | TYPICAL DETAILS |
| 7 | C-5 | PENETRATION DETAILS |

CLIENT:

AVENUE 55
600 UNIVERSITY ST.
SUITE 2305
SEATTLE, WA, 98101
PHONE: 206.707.9696
CONTACT: DREW ZABOROWSKI

GENERAL CONTRACTOR:

SIERRA CONSTRUCTION
19900 144TH AVE NE
WOODENVILLE, WA 98072
PHONE: 425.487.5200
CONTACT: BRYAN PLOETZ

ENGINEER:

MICHAEL SPILLANE
HERRERA ENVIRONMENTAL CONSULTANTS
2200 SIXTH AVENUE
SUITE 1100
SEATTLE, WA 98121
PHONE: 206.441.9080
CONTACT: MICHAEL SPILLANE

1 / C-1 — DETAIL REFERENCE NUMBER; DRAWING ON WHICH DETAIL IS SHOWN

DETAIL — SCALE: NTS — 1 / C-1 — DETAIL REFERENCE NUMBER; DRAWING FROM WHICH DETAIL WAS TAKEN

A / C-4 — SECTION REFERENCE LETTER; DRAWING ON WHICH SECTION IS SHOWN

SECTION/PROFILE — SCALE: NTS — A / C-2 — SECTION/PROFILE REFERENCE LETTER; DRAWING FROM WHICH SECTION/PROFILE WAS TAKEN

"-" INDICATES THAT THE DETAIL/SECTION IS SHOWN ON THE SAME SHEET

"TYP" INDICATES THAT THE DETAIL/SECTION IS UNIFORMLY TYPICAL THROUGHOUT PROJECT EXCEPT WHERE OTHERWISE NOTED

"VAR" SPECIFIES THAT DETAIL/SECTION WAS TAKEN FROM VARIOUS DRAWINGS

NOTE AND DETAIL/SECTION REFERENCING

ORIGINATED BY: / DATE: / /
CHECKED BY: / DATE: / /
BACK-CHECKED BY: / DATE: / /
CORRECTED BY: / DATE: / /
VERIFIED BY: / DATE: / /
O:\proj\Y2016\16-06475-000\CAD\dwg\G-1.dwg | 6/7/2018 1:52 PM | Todd Prescott

**BID SET**

| No. | REVISION | BY | APP'D | DATE |
|---|---|---|---|---|
| | | | | |

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

811 Know what's below. Call before you dig.

HERRERA

MICHAEL M. SPILLANE — STATE OF WASHINGTON — 30780 — REGISTERED PROFESSIONAL ENGINEER

| | | | |
|---|---|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT | | |
| DESIGNED: M. SPILLANE | DRAWN: - | | |
| DESIGNED: - | CHECKED: - | | |
| SCALE: AS NOTED | APPROVED: M. SPILLANE | | |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

COVER SHEET

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: G-1
SHEET NO: 1 OF 7

## METHANE MITIGATION SYSTEM NOTES:

### GENERAL:

1. A PASSIVE SUBSLAB METHANE BARRIER AND VENTING SYSTEM IS TO BE INSTALLED IN OFFICE LOCATIONS.
2. A FLEXIBLE, IMPERMEABLE, GEOMEMBRANE LINER SHALL BE PLACED BENEATH THE NEW SLAB-ON-GRADE. THE GEOMEMBRANE WILL BE SOLVENT WELDED TO PROVIDE A CONTINUOUS MEMBRANE BARRIER.
3. WHERE GRADE BEAMS OR FOOTINGS PENETRATE THE MEMBRANE, THE MEMBRANE WILL BE PHYSICALLY ATTACHED TO GRADE BEAMS, FOOTINGS, OR WALLS TO SEAL THE LINER TO THE BUILDING USING BATTEN STRIPS.
4. A 2" PVC COLLECTION PIPING WILL BE INSTALLED WITHIN THE DRAINAGE LAYER BELOW THE SLAB.
5. THE COLLECTION PIPING WILL BE ROUTED TO A VENT PIPE DISCHARGING A MINIMUM OF THREE FEET ABOVE THE BUILDING ROOFLINE AS SHOWN ON THE DRAWINGS.
6. PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE, A NON-WOVEN GEOTEXTILE OR SAND SHALL BE PLACED OVER THE GEOMEMBRANE TO PREVENT PUNCTURE.

### COLLECTION GRAVEL LAYER:

1. THE COLLECTION GRAVEL LAYER SHALL CONSIST OF CLEAN, FREE DRAINING GRAVEL OR CRUSHED ROCK WITH LESS THAN 2 PERCENT BY WEIGHT PASSING THE U.S. NO. 200 MESH SIEVE (FINES) BASED ON THE 3/4-INCH MINUS FRACTION.
2. PLACE THE DRAINAGE MATERIAL IN LEVEL LIFTS AND COMPACT TO A DENSE AND UNYIELDING CONDITIONING. SYSTEM DESIGNER SHOULD EVALUATE THE COMPACTION OF THE DRAINAGE MATERIAL PRIOR TO THE PLACEMENT OF VAPOR BARRIERS, REINFORCING STEEL, OR OTHER OBSTRUCTIONS.
3. SUBMIT A SAMPLE OF AND/OR SAMPLE SPECIFICATIONS FOR THE PROPOSED DRAINAGE MATERIAL FOR APPROVAL AT LEAST 1 WEEK BEFORE ANY USE ON SITE.

### PERFORATED COLLECTOR PIPES:

1. A SERIES OF PERFORATED PIPES SHALL BE INSTALLED WITHIN THE DRAINAGE LAYER TO COLLECT AND ROUTE METHANE GAS AWAY FROM THE SLAB.
2. EMBED MINIMUM 2" PVC PIPES WITH THE GRAVEL DRAINAGE LAYER BENEATH THE FLOOR SLAB.
3. PLACE THE PERFORATED PIPES FLAT WITH THEIR CROWN LOCATED WITHIN 2 INCHES OF THE BASE OF THE GEOMEMBRANE.
4. THE PIPES SHOULD CONTAIN PERFORATIONS AROUND THE ENTIRE PIPE DIAMETER, OR IF ONLY PARTIALLY PERFORATED, THE PERFORATIONS SHOULD BE ALIGNED TOWARDS THE CRESTS OF THE PIPES FOR METHANE COLLECTION.
5. THE PIPES SHOULD BE LAID OUT SUCH THAT THE LONGEST METHANE GAS TRAVEL PATH IS LESS THAN APPROXIMATELY 75 FEET.
6. PIPING SYSTEMS MUST BE FLAT (NO SLOPE). THE VENT PIPE CONNECTION TO THE HEADER SHALL NOT CONTAIN ANY SAGS (LOW POINTS)

### SAND:

1. SAND SHALL BE BUILDING SAND, MINERAL AGGREGATE TYPE 7, PER 9-03-12 (6) CITY OF SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION 2014 EDITION.

### GEOMEMBRANE:

1. THE GEOMEMBRANE SHALL BE 30 MIL PVC MEETING THE REQUIREMENTS OF ASTM D-7176 AND THE FOLLOWING:

   FACTORY FABRICATED SEAMS:

   PEEL STRENGTH (LBS/IN, MIN) ASTM D-882,15

   SHEAR STRENGTH (LBS/IN, MIN) ASTM D-882,58.4

   THICKNESS ± 5% ASTM D-5199.030"

   SPECIFIC GRAVITY (MIN) ASTM D-792,1.20

   TENSILE (LB/IN-WIDTH, MIN) ASTM D-882,73
2. THE PVC GEOMEMBRANE MUST EXTEND THE FULL LENGTH (AND WIDTH) OF THE SLAB. THE PVC GEOMEMBRANE SHOULD TIE INTO AN INTERIOR CONCRETE GRADE BEAM OR EXTERIOR FOOTING OR EDGE OF THE SLAB AS SHOWN ON DRAWINGS.
3. THE PVC GEOMEMBRANE SHOULD BE FACTORY SEAMED TO MINIMIZE FIELD SEAMS.
4. ALL FIELD SEAMS MUST BE SOLVENT-WELDED WITH OVERLAPS AS SPECIFIED BY THE PVC MANUFACTURER.
5. ALL SERVICES/UTILITIES THAT NEED TO PENETRATE THE PVC GEOMEMBRANE SHALL BE BOOTED THROUGH THE MEMBRANE TO ENSURE A COMPLETE SEAL AROUND THE SERVICE. SEE DRAWINGS.
6. EACH BOOT WILL BE SOLVENT WELDED.
7. SERVICES PENETRATING THE PVC GEOMEMBRANE MUST BE A MINIMUM OF 6" APART TO PROVIDE ADEQUATE ROOM TO CONSTRUCT THE PIPE BOOT.
8. IT IS PREFERRED THAT ALL ELECTRICAL CONDUITS RUN ON TOP OF THE PVC GEOMEMBRANE. IF SOME ELECTRICAL CONDUITS ARE BELOW THE GEOMEMBRANE, IT IS RECOMMENDED THAT THEY RUN TO THE PERIMETER OF THE SLAB AND ENTER THE BUILDING FROM THE OUTSIDE WALL TO MINIMIZE THE NUMBER OF BOOTS THROUGH THE LINER.
9. FOR PROTECTION AGAINST PUNCTURES OR DAMAGE FROM ABOVE THE LINER, A MINIMUM OF 2 INCHES OF SAND OR NONWOVEN SEPARATION GEOTEXTILE SHALL BE PLACED PRIOR TO INSTALLATION OF UTILITIES OR REBAR REINFORCEMENT FOR THE CONCRETE SLAB. THE GEOMEMBRANE MAY BE PLACED UNDER UTILITIES IN A UTILITY TRENCH WITH A MINIMUM OF 2-INCHES OF SAND ABOVE THE GEOMEMBRANE.

### GEOTEXTILE:

1. THE MATERIAL SHALL BE A GEOTEXTILE CONSISTING ONLY OF LONG CHAIN POLYMERIC FIBERS OR YARNS FORMED INTO A STABLE NETWORK SUCH THAT THE FIBERS OR YARNS RETAIN THEIR POSITION RELATIVE TO EACH OTHER DURING HANDLING, PLACEMENT, AND DESIGN SERVICE LIFE. AT LEAST 95 PERCENT BY WEIGHT OF THE MATERIAL SHALL BE POLYOLEFINS OR POLYESTERS.
2. THE MATERIAL SHALL BE FREE FROM DEFECTS OR TEARS. THE GEOTEXTILE SHALL ALSO BE FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS HYDRAULIC OR PHYSICAL PROPERTIES AFTER INSTALLATION.
3. THE GEOTEXTILE SHALL CONFORM TO THE PROPERTIES AS INDICATED IN TABLE 3 FOR SEPARATION - NONWOVEN. PER 9-37.1 GEOTEXTILE AND THREAD FOR SEWING OF THE CITY OF SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION 2014 EDITION.
4. OVERLAP GEOTEXTILE PANELS A MINIMUM OF 12 INCHES.

### VENT RISERS:

1. THE PERFORATED COLLECTOR PIPES SHALL BE TIED TO ONE ANOTHER AND CONNECTED TO ONE OR MORE VERTICAL VENT RISERS. VENT RISERS SHALL BE PVC AND NOT BE LARGER IN DIAMETER THAN THE HORIZONTAL COLLECTOR PIPES.
2. 3-INCH DIAMETER RISER REQUIRES 1 RISER FOR EVERY 7,500 SF OF FOOTPRINT (MINIMUM OF 2 RISERS PER OFFICE AREA).
3. RISER PIPES SHALL HAVE A MAXIMUM SPACING AND LENGTH OF 100 FEET.
4. PROVIDE A RAIN GUARD AT THE TOP TERMINUS OF THE VENT RISER THAT DOES NOT RESTRICT THE UPWARD FLOW OF AIR OR METHANE FROM THE PIPE.
5. TERMINATE VENT RISERS AS FOLLOWS:

   10 FEET OR MORE ABOVE GRADE;

   10 FEET OR MORE AWAY FROM ANY WINDOW, DOOR, ROOF HATCH, OPENING, OR AIR INTAKE INTO THE BUILDING;

   3 FEET OR MORE ABOVE HIGHEST POINT IN ROOF WITHIN 10 FEET;

   3 FEET OR MORE AWAY FROM ANY PARAPET;

   4 FEET OR MORE AWAY FROM PROPERTY LINE; AND

   5 FEET OR MORE AWAY FROM ELECTRICAL DEVICES.
6. RISERS SHALL BE LOCATED AWAY FROM ANY LOCATIONS WITH SPARKS OR OPEN FLAME.
7. THE PIPES WILL BE SECURED TO THE BUILDING WALL AND VENTED A MINIMUM OF 3 FEET ABOVE THE EAVE AND A MINIMUM OF 10 FEET AWAY FROM ANY POTENTIAL AIR INTAKE.
8. PIPE USED FOR VENTING SHALL BE SECURED AS SHOWN ON DRAWINGS WITH GALVANIZED UNISTRUT PIPE SUPPORTS AND PIPE CLAMPS.
9. VENT PIPE SHALL BE BOOTED THROUGH EAVE AND ROOF WITH COMPATIBLE ROOFING SYSTEM WATERTIGHT MANUFACTURED BOOT OR ROUTED UP AND OVER THE PARAPET WITHOUT AND POSITIVELY DRAIN WITH A MINIMUM OF 2 PERCENT SLOPE.
10. VENT PIPES SHALL HAVE ISOLATION VALVES INSTALLED TO ALLOW FOR HYDROSTATIC OR PNEUMATIC LEAK TESTING.
11. ALL LEAK TESTING SHALL BE PERFORMED IN THE PRESENCE OF A REPRESENTATIVE OF THE LFG MITIGATION DESIGNER.

### UTILITIES:

1. PENETRATIONS THROUGH THE FLOOR SLAB SHALL BE SEALED WITH PIPE COLLARS IN THE SLAB, SO THAT METHANE CANNOT DIRECTLY FLOW FROM THE SUBSLAB GRAVEL LAYER INTO THE INTERIOR OF THE BUILDING.
2. CONDUIT SHALL BE SEALED BETWEEN THE FLOOR SLAB AND THE FIRST JOINT ABOVE THE FLOOR SLAB TO PREVENT TRANSMISSION OF GAS THROUGH THE CONDUIT.

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ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

811 Know what's below. Call before you dig.

HERRERA

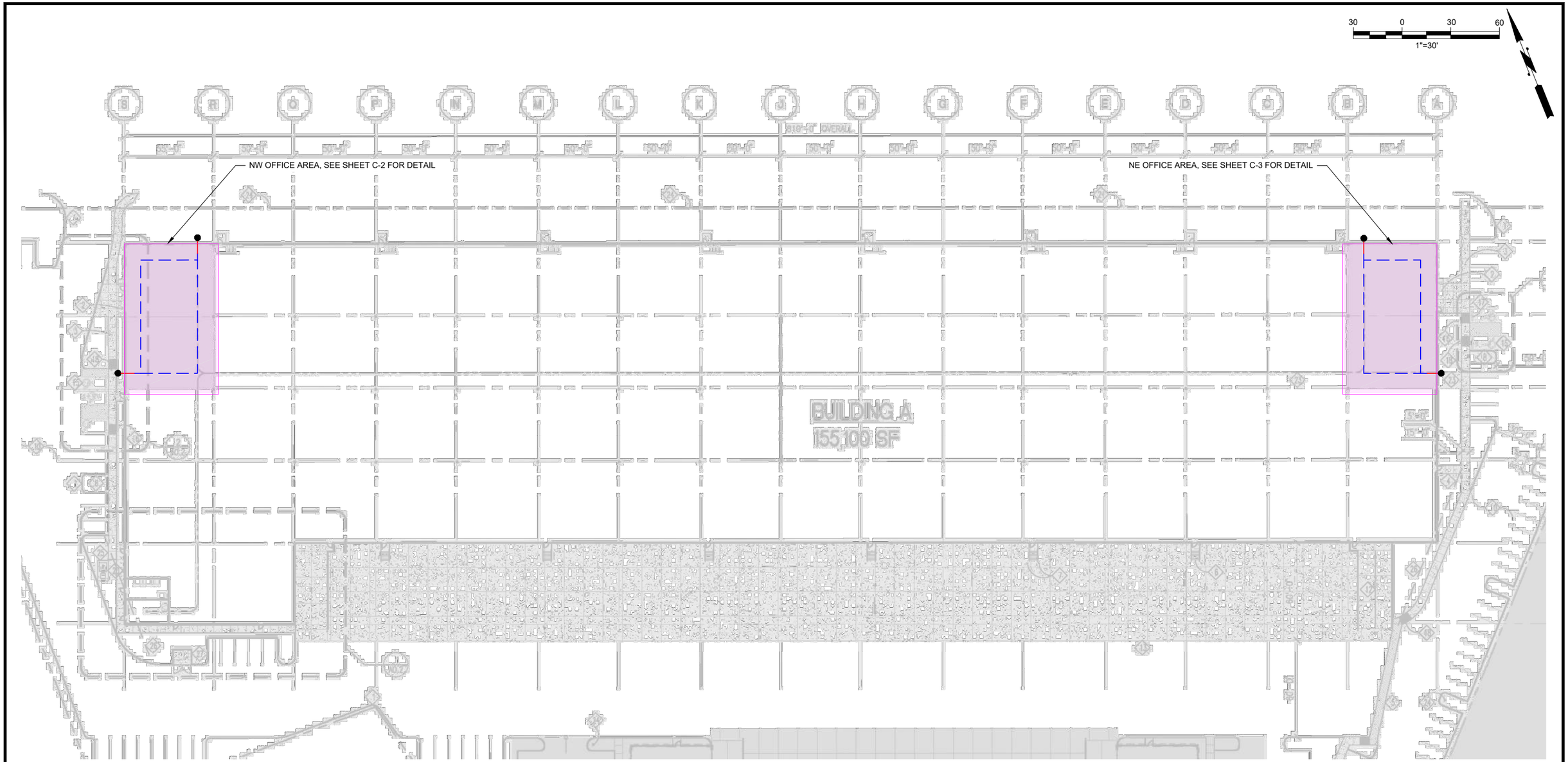
MICHAEL M. SPILLANE STATE OF WASHINGTON 30780 REGISTERED PROFESSIONAL ENGINEER

| | | | |
|---|---|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT | | |
| DESIGNED: M. SPILLANE | DRAWN: - | | |
| DESIGNED: - | CHECKED: - | | |
| SCALE: AS NOTED | APPROVED: M. SPILLANE | | |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

GENERAL NOTES

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: G-2
SHEET NO: 2 OF 7




NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-5.
3. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
4. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
5. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

LEGEND:

- 4" RISER VENT
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 4" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- 30mil PVC MEMBRANE EXTENTS

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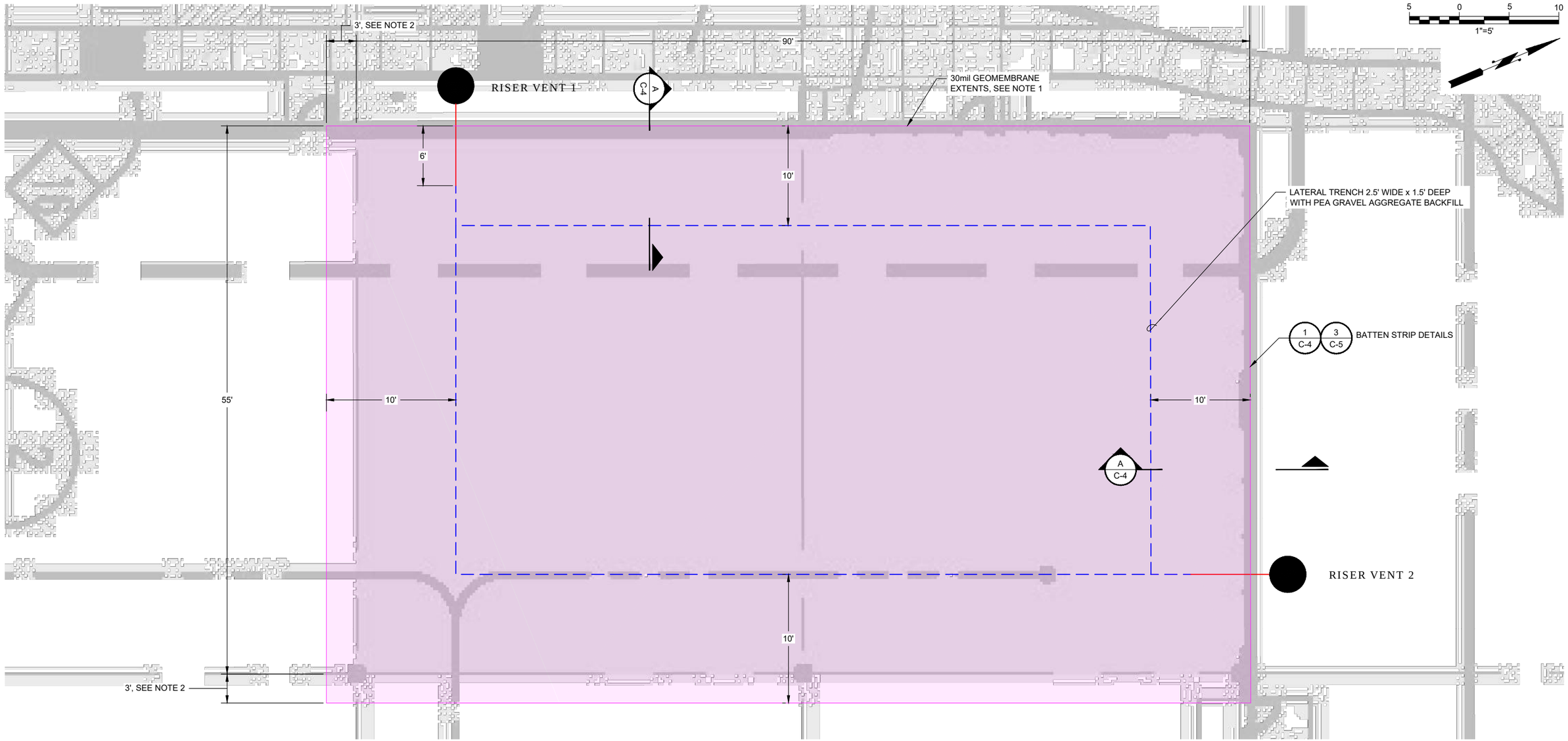
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

BUILDING A

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-1
SHEET NO: 3 OF 7




## NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. EXTEND LINER 3' BEYOND OFFICE FOOTPRINT OR BATTEN STRIP TO FOOTING OR GRADE BEAM.
3. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-5.
4. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
5. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
6. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

## LEGEND:

- 2" RISER VENT
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 2" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- 30mil PVC MEMBRANE EXTENTS

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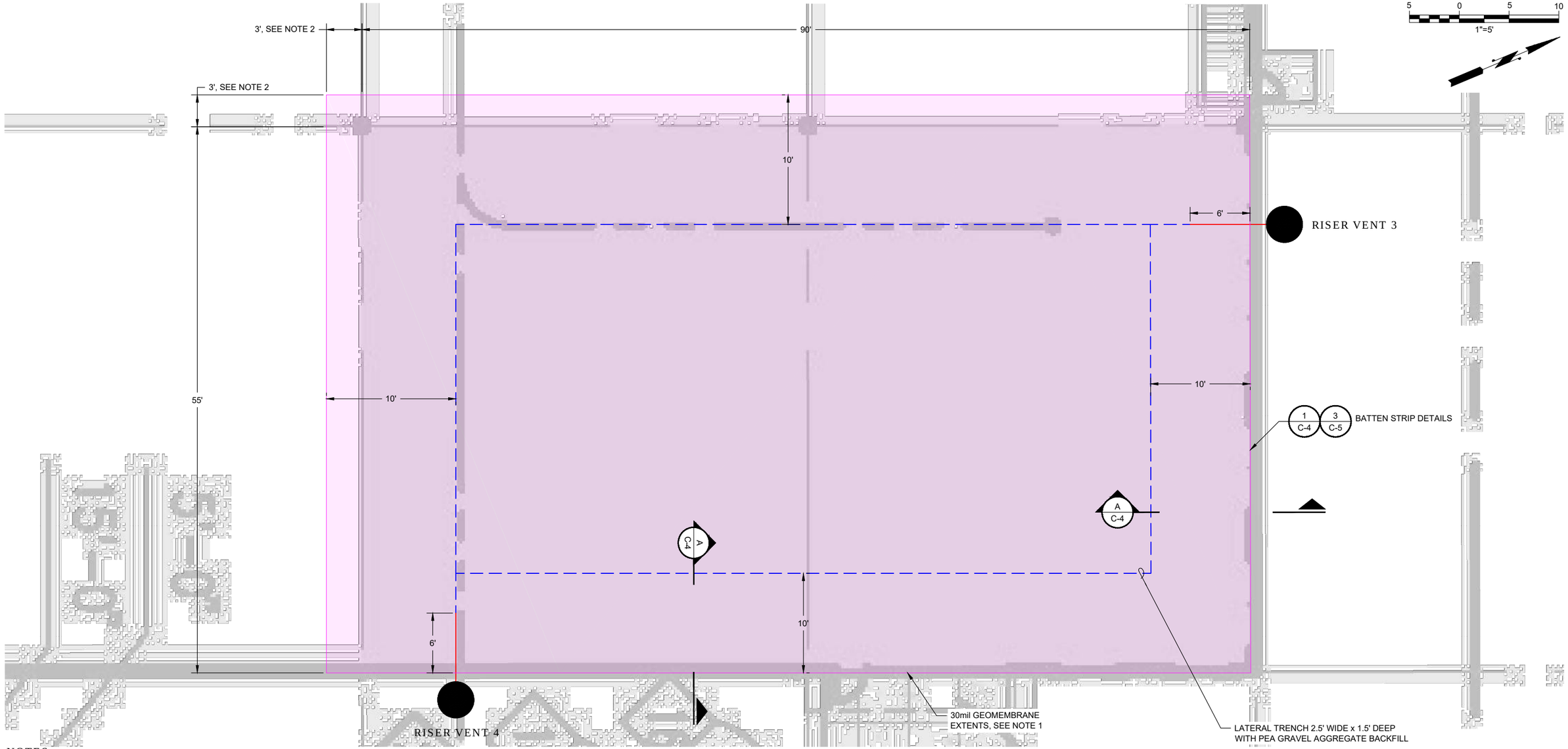
| DESIGNED: M. SPILLANE | DRAWN: - | PROJECT NO: 16-06475-000 | |
| DESIGNED: - | CHECKED: - | DRAWING NO: C-2 | |
| SCALE: AS NOTED | APPROVED: M. SPILLANE | SHEET NO: 4 | OF 7 |

# AVE 55
TAYLOR WAY METHANE MITIGATION

NORTH WEST OFFICE AREA OF BUILDING A




NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. EXTEND LINER 3' BEYOND OFFICE FOOTPRINT OR BATTEN STRIP TO FOOTING OR GRADE BEAM.
3. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-5.
4. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
5. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
6. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

LEGEND:

- 2" RISER VENT
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 2" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- 30mil PVC MEMBRANE EXTENTS

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| DESIGNED: M. SPILLANE | DRAWN: - | | |
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| SCALE: AS NOTED | APPROVED: M. SPILLANE | | |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

NORTH EAST OFFICE AREA OF BUILDING A

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-3
SHEET NO: 5 OF 7

TYPICAL BATTEN STRIP SEAL
PHOTO
SCALE: NTS

1
-

TYPICAL PERFORATED COLLECTION PIPE
PHOTO
SCALE: NTS

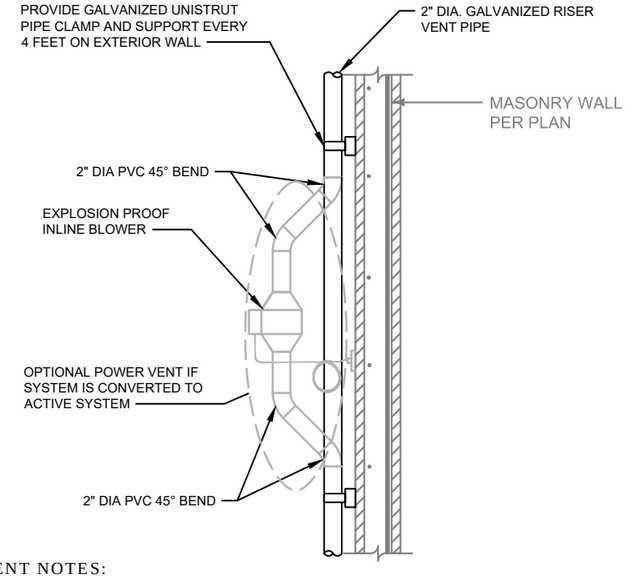
2
-

TYPICAL COLLECTION PIPE TROUGH GRADE BEAM
PHOTO
SCALE: NTS

3
-

TYPICAL VENT PIPE AROUND EVE
PHOTO
SCALE: NTS

4
-

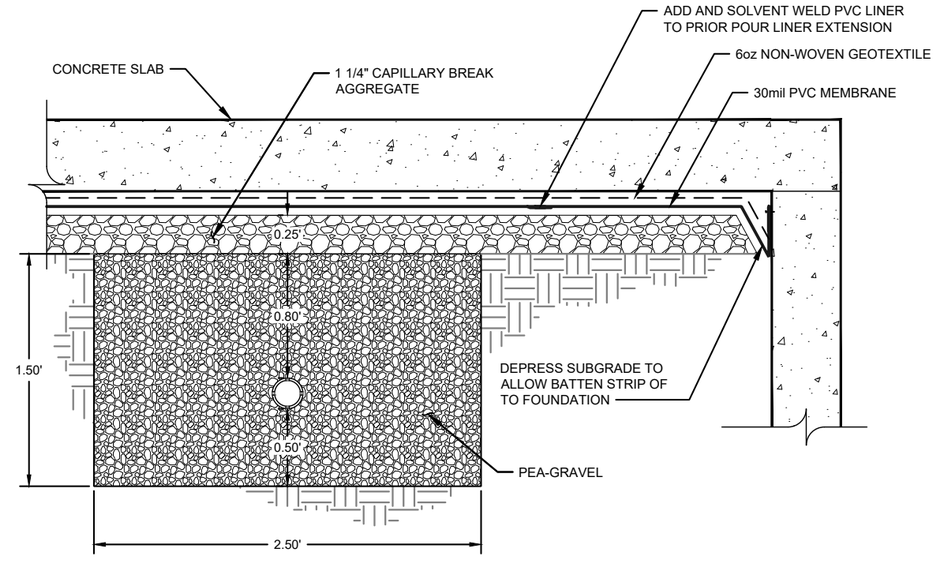



VENT NOTES:

1. 10 FEET OR MORE AWAY FROM ANY WINDOW, DOOR, ROOF HATCH, OPENING, OR AIR INTAKE INTO THE BUILDING.
2. 3 FEET OR MORE ABOVE HIGHEST POINT IN ROOF WITHIN 10 FEET.
3. 3 FEET OR MORE AWAY FROM ANY PARAPET.
4. 4 FEET OR MORE AWAY FROM PROPERTY LINE AND 10 FEET OR MORE AWAY FROM ELECTRICAL DEVICES.

TYPICAL INLINE BLOWER ON VENT PIPE
DETAIL
SCALE: NTS

5
-




TYPICAL COLLECTOR PIPE TRENCH
SECTION
SCALE: NTS

A
C-2

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STATE OF WASHINGTON
30780
REGISTERED
PROFESSIONAL ENGINEER

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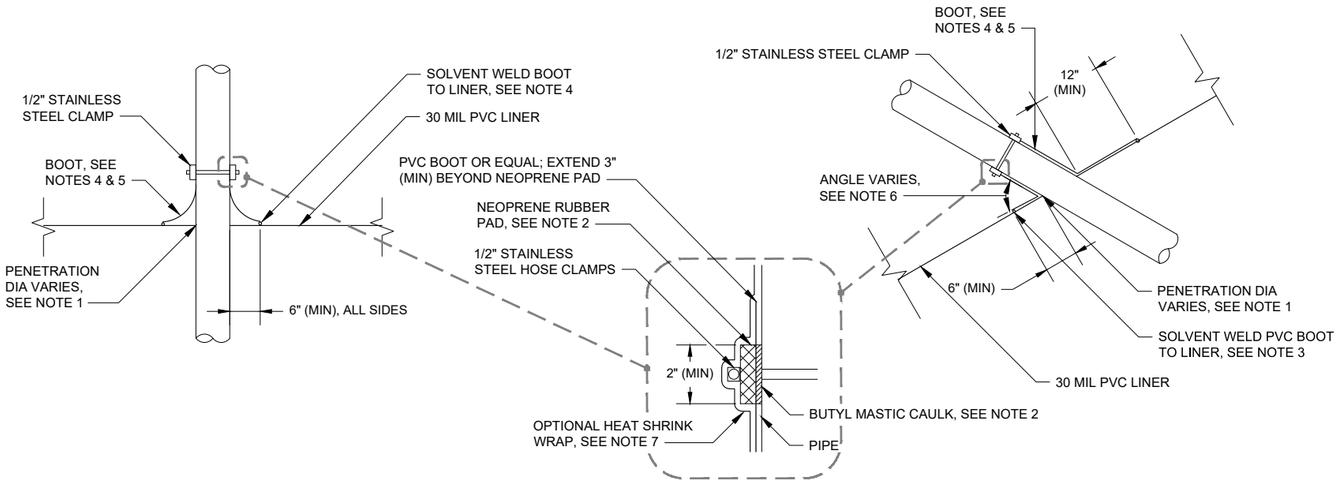
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

TYPICAL DETAILS

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-4
SHEET NO: 6 OF 7




DETAIL - PERPENDICULAR PENETRATION WITH LINER 1/-

SCALE: NTS

DETAIL - ANGLED PENETRATION WITH LINER 2/-

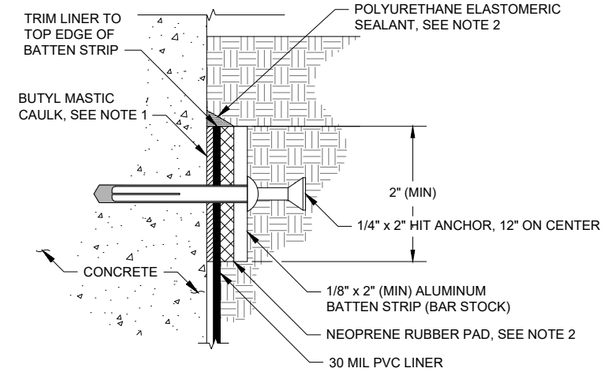
SCALE: NTS

## GENERAL NOTES:

1. CONTRACTOR MAY USE PREFABRICATED PIPE BOOTS IN LIEU OF FIELD-FABRICATED BOOTS. CONNECT PREFABRICATED BOOT TO LINER AND PIPE PER MANUFACTURER'S RECOMMENDATIONS.

## CONSTRUCTION NOTES:

1. CUT OPENING IN LINER FOR PIPE TO WITHIN 1/2" OF PIPE OUTSIDE DIAMETER.
2. APPLY BUTYL MASTIC CAULK AND NEOPRENE RUBBER PAD CONTINUOUSLY AROUND PIPE.
3. PROVIDE CONTINUOUS WELD AT PIPE BOOT/LINER INTERFACE.
4. FORM BOOT WITH SUFFICIENT MATERIAL TO PREVENT OVERSTRESSING DURING BACKFILLING, BUT WITHOUT FOLDS OR WRINKLES.
5. CONSTRUCT BOOT FROM SAME MATERIAL AS THE LINER.
6. ANGLE SHOULD NOT BE LESS THAN 30°. IF ANGLE IS LESS THAN 30° ADD SOIL AROUND THE PIPE TO INCREASE THE ANGLE AND PREVENT STRESSING AND CRACKING.
7. SEAL CLAMP AND END OF BOOT WITH HEAT SHRINK WRAP. EXTEND HEAT SHRINK WRAP ONE PIPE DIAMETER (MINIMUM) BEYOND CLAMP.




## CONSTRUCTION NOTES:

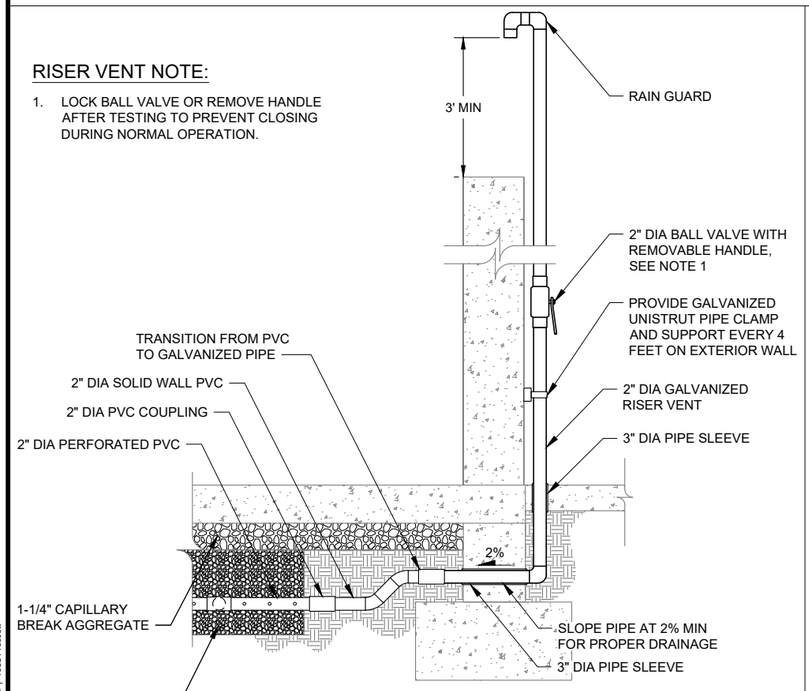
1. APPLY BUTYL MASTIC CAULK, BATTEN STRIP, AND NEOPRENE RUBBER PAD CONTINUOUSLY ALONG TOP EDGE OF LINER.
2. APPLY BEAD OF POLYURETHANE ELASTOMERIC SEALANT CONTINUOUSLY ALONG TOP EDGE OF BATTEN STRIP ASSEMBLY.

DETAIL - TYPICAL BATTEN STRIP 3/-

SCALE: NTS

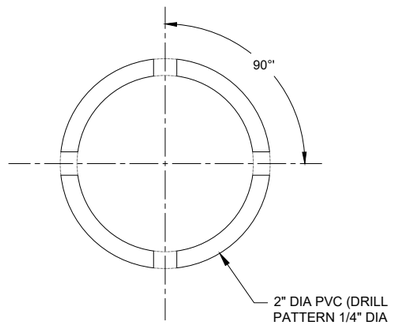
## RISER VENT NOTE:

1. LOCK BALL VALVE OR REMOVE HANDLE AFTER TESTING TO PREVENT CLOSING DURING NORMAL OPERATION.



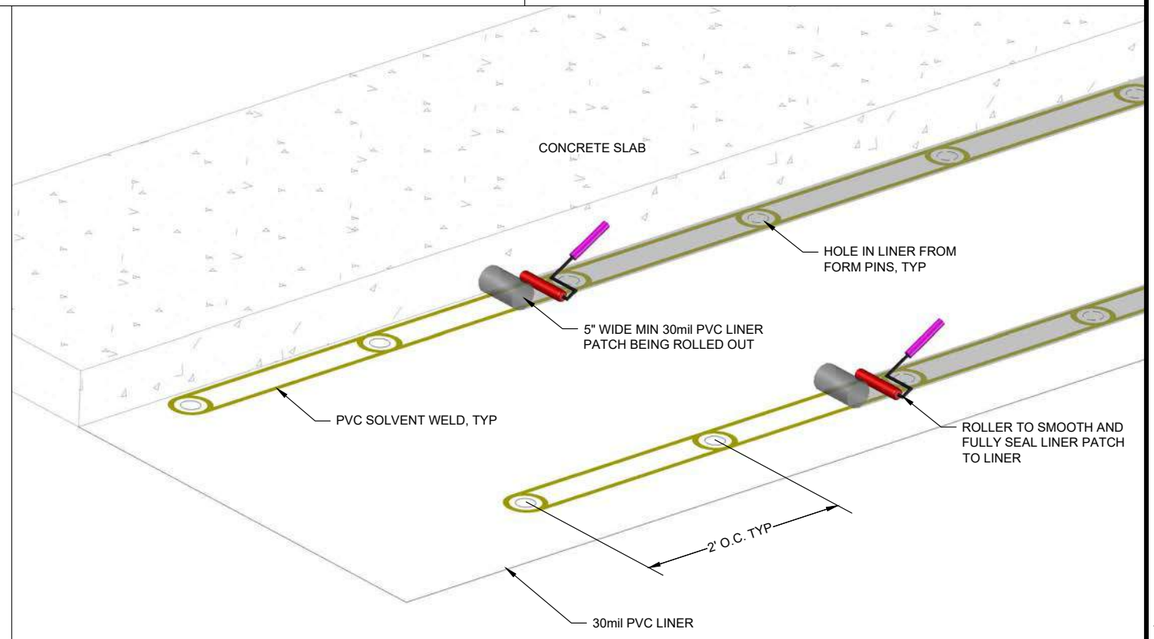

DETAIL - PIPE PENETRATION TROUGH EXTERIOR WALL 4/-

SCALE: NTS




DETAIL - PIPE PERFORATION DETAIL 5/-

SCALE: NTS




DETAIL - 30mil PVC LINER PATCHING 6/-

SCALE: NTS

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HERRERA

MICHAEL M. SPILLANE — STATE OF WASHINGTON — 30780 — REGISTERED PROFESSIONAL ENGINEER

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| DESIGNED: M. SPILLANE | DRAWN: - | | |
| DESIGNED: - | CHECKED: - | | |
| SCALE: AS NOTED | APPROVED: M. SPILLANE | | |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

PENETRATION DETAILS

DATE: JUNE 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-5
SHEET NO: 7 OF 7

ORIGINATED BY: / DATE: / /
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# Daily Field Report

**Project No.** 16-06475-000

**(1)** **Day** Thursday **Date** 05/31/18 **Work Period** 7:00 **AM** **to** 9 **AM** **Report No.** 1

**Weather** overcast **Temp. Max.** 48 **°F** **Min.** 45 **°F** **Precipitation** no

**(2)** **Personnel On Site**

| | | |
|---|---|---|
| Todd Prescott - Herrera | | |
| Sam - Sierra | | |
| Drew – Ave 55 | | |
| | | |

**(3)** **Major Equipment on Project and Amount of Use**

| No. | Description | Size/Capacity | Hrs. Oper. |
|---|---|---|---|
| 1 | CAT excavator 336E | large | |
| 1 | Grading machine | | |
| | | | |

**(4)** **Work Accomplished Today**

Inspected and approved 2-inch diameter perforated Sch 40 PVC for the north west office area.

Backfilled pipe trench with pea-gravel and graded with 1-1/4” capillary break aggregate.

30 mil PVC liner was delivered, and non-woven geotextile was ordered.

See Field notes.

**(5)** **Action Items:**

Todd and Michael to discuss exact liner/batten strip connection to foundation and update plans.

**(6)** Todd Prescott — Signature

5-31-2018 — Date

16-06475-000 Taylor Way Methane Weather: overcast Temp low of 45 - high of 48

Tuesday 5/31/2018

7:00 I arrived on-site, met with Sam from Sierra and Drew from Ave 55. After a brief discussion they showed me the north west office area site of building A. Pipe trenches were 2.5-feet wide and bedded with pea-gravel. The 2-inch diameter perforated schedule 40 had already been drilled and laid out per the plains. The 0.25-inch perforations were drilled at 6-inches on center 90 degrees apart. The Perforated pipes covered a 70-foot by 35-foot rectangle with two stubs extending out 11.5-feet for the future vertical riser vents.

7:45 1-foot of pea-gravel is being backfilled over perforated pipe.

8:15 Perforated pipe trench is fully backfilled.

8:30 Large CAT grading machine began grading the 1-1/4-inch capillary break aggregate.

8:45 Leaving site.




Todd Prescott 6/4/2018

# Daily Field Report

**Project No.** 16-06475-000

**(1)** **Day** Wednesday **Date** 06/06/18 **Work Period** 7:00 **AM** **to** 10:30 **AM** **Report No.** 2

**Weather** Sunny **Temp. Max.** 60 **°F** **Min.** 58 **°F** **Precipitation** no

**(2)** **Personnel On Site**

| | | |
|---|---|---|
| Todd Prescott - Herrera | | |
| Sam - Sierra | | |
| Wade – Sierra | | |
| | | |

**(3)** **Major Equipment on Project and Amount of Use**

| No. | Description | Size/Capacity | Hrs. Oper. |
|---|---|---|---|
| | N/A | | |
| | | | |
| | | | |

**(4)** **Work Accomplished Today**

NW office area of Building A - I inspected and approved 2 vertical pipe penetrations. Inspected and approved the geotextile over the liner.

See Field notes.

**(5)** **Action Items:**

When forms on the north and west side of the office area are removed, all of the 2-foot on center pin holes for the forms will need to be patched using 30mil PVC liner and solvent welded.

**(6)** Todd Prescott — Signature

6-6-2018 — Date

16-06475-000 Taylor Way Methane Weather: sunny Temp low of 58 - high of 60

Wednesday 6/6/2018

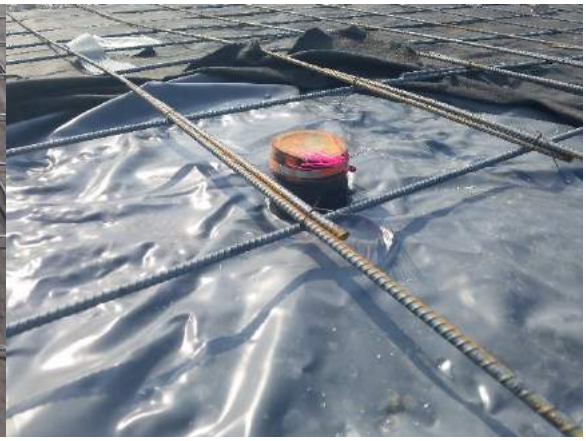
7:00 I arrived on-site, met with Wade from Sierra. I observed Sierra installing two vertical pipe penetrations using two pre-fabricated pipe penetration boots, butyl mastic strip, and polyurethane elastomeric sealant at both penetrations. Penetration zones were then covered with 6oz non-woven geotextile.

30mil PVC liner and geotextile extended over 3-feet past office area extents on the South and East side of the Office area. The North and West sides of the office area will be secured and sealed using batten strips.

When the concrete forms on the North and West sides of the office area are removed, all of the holes from the pins holding the forms at 2-feet on center will need to be patched, using 30mil PVC liner and solvent welded for a continuous seal.

Batten strip connection and pin hole patching will need to be inspected before final concrete pour.

10:30 I am leaving the site.



Todd Prescott 6/6/2018

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Two Union Square
601 Union Street, Suite 600
Seattle, WA 98101
tel: 206.292.2078 fax: 206.682.7867

# Memorandum

**To:** Steve Teel, Washington State Department of Ecology

**Copies:** Dave Zabrowski, Avenue 55; Scott Hooton, Port of Tacoma

**From:** Tom Colligan and Kristin Anderson, Floyd|Snider

**Date:** August 10, 2018

**Project No:** Ave 55-Taylor Way

**Re:** **Sampling Plan Addendum for Vapor Intrusion Assessment**
**1544 Taylor Way, Tacoma, Washington**

This sampling plan is an addendum to Appendix B of the Interim Action Work Plan (IAWP; Floyd|Snider 2017) for the Taylor Way property, which is part of the larger Taylor Way and Alexander Avenue Fill Area Site. Appendix B of the IAWP presented procedures for a methane survey and preliminary vapor intrusion (VI) assessment at the Taylor Way property. This addendum presents procedures for supplemental VI assessment based on the results from the preliminary VI assessment that was performed as described below.

## BACKGROUND

The methane survey and preliminary VI assessments were performed before and during the preloading phase of construction of two above-grade warehouse buildings (Building A and Building B) at the property, between December 2016 and May 2018. Soil gas samples were collected from above the shallow groundwater table at several locations within each building footprint and along the future drive aisle between the two buildings. The vapor samples were field analyzed for methane using a landfill gas detector. At a subset of the locations, soil gas samples were collected for laboratory analysis of volatile organic compounds (VOCs). The locations of the methane and VOC samples are shown on Figure 1. The results of the methane survey and preliminary VI assessment were summarized in a memorandum (Floyd|Snider 2018). The memorandum also described the plans for the installation of a vapor mitigation system, which was installed under the future offices of each warehouse.

Methane was not detected in soil gas at either building at concentrations that necessitated further action per the IAWP. The maximum detected soil methane concentration was 1.4 percent by volume.

On the western portion of Building A, however, VOC analysis detected chloroform at a concentration exceeding the Model Toxics Control Act (MTCA) screening level for industrial

worker exposure. Benzene was also detected at a concentration less than its industrial screening level but greater than the residential screening level. A number of additional VOCs were detected but at concentrations less than residential MTCA screening levels.

At Building B, VOC sampling conducted during construction was complicated by excessive moisture and perched wet lenses in the soil and pad backfill. Multiple attempts were made to acquire samples free of moisture, but were abandoned due to water in the sampling point. In the sample that was able to be collected, the laboratory reported excessive water vapor as well as excessive residual vacuum in the Summa canister that was used for sample collection. Chloroform, benzene, and other VOCs exceeded their MTCA industrial screening levels at this location; however, these data are not considered be completely reliable due to the bias caused by the presence of water vapor.

Based on the results of the preliminary assessment, which indicated a potential excessive VI risk under the future buildings, a passive vapor mitigation system was installed under each of the two office "node" locations in both buildings. The office nodes are shown on Figure 1. As described in Floyd|Snider's 2018 memorandum, the passive mitigation system includes perforated PVC piping laid in trenches under the subgrade of the office areas. The piping is connected to an above-ground riser vent. After the piping was installed, it was overlain with a PVC membrane and the concrete floor slab was subsequently poured over the membrane. The passive system allows ventilation driven by atmospheric pressure differentials (i.e., soil vapor at pressure exceeding atmospheric pressure vents via the riser so vapor pressure cannot build up below the floor slab). The vertical riser allows for the installation of an inline blower. The addition of a blower would convert the system from passive ventilation to an active system that would maintain a negative pressure under the floor slab, if needed.

**PROPOSED SUPPLEMENTAL VAPOR INTRUSION ASSESSMENT**

Additional VI assessment is necessary to better quantify the VI risk at the two warehouse buildings to determine if any additional mitigation actions are needed. The additional VI assessment will include the following scope of work:

- Sub-slab soil vapor sampling
- Passive ventilation system evaluation
- Data evaluation and indoor air sampling

Sampling will be conducted in accordance with VI protocols already described in the IAWP, which presents standard VI field sampling standard procedures, laboratory analytical methods, quantitation limits, and data quality objectives.

**Sub-Slab Soil Vapor Sampling**

Sub-slab soil vapor samples will be collected from representative locations at Building A and Building B, including in the vicinity of the prior VOC detections in soil gas and at locations immediately adjacent to the office nodes. A total of 10 permanent vapor monitoring points will be installed as shown on Figures 2 and 3. Permanent sub-slab vapor sample points will extend 6 inches below the concrete floor slab in order to collect soil vapors directly in contact with the slab; sub-slab monitoring point installation details are presented in Figure 4. Field procedures for vapor point installation and sampling that were presented in the IAWP are provided as Attachment 1 to this sampling plan addendum.

The sub-slab monitoring points will initially be sampled twice. The first event will be completed 48 hours after the monitoring points are installed. The second event will be completed after the roof has been installed and the building ventilation systems have been commissioned, which is anticipated to occur by November 2018. Samples will be analyzed by USEPA Method TO-15/TO-15 SIM for the analytes specified in IAWP.

**Passive Ventilation System Evaluation**

The passive mitigation system includes sub-slab perforated PVC piping designed to vent soil vapor, combined with a PVC membrane to seal the system below the concrete floor slab. Performance monitoring will be performed to assess the efficacy of the passive ventilation driven by atmospheric differentials and the PVC membrane seal.

The passive vapor mitigation systems installed under the two office "node" locations in both buildings will be evaluated by:

1. Collecting sub-slab vapor samples at the perimeter of the lining system at each office node and monitoring initial differential pressure prior to sample collection
2. Collecting a vapor sample from one vent riser at each office node
3. Collecting indoor air samples as discussed below

Passive vapor mitigation system evaluation will be performed during the second sub-slab soil vapor sampling event. During sub-slab sample collection at the locations along the perimeter of the lining system (i.e., adjacent to the office nodes), the differential pressure below the slab will be measured by connecting a handheld manometer to the sample port prior to sample collection. If sub-slab differential pressures greater than 500 Pascals (approximately 2 inches of water column pressure) are detected below the membrane, a photoionization detector (PID) will be used to perform a detailed inspection of office node areas including slab penetrations, floor drains, and any visible expansion or contraction joints or cracks in the concrete to determine if the membrane is functioning as an effective barrier.

Vent riser sampling will be performed to assess whether vapors are being vented through the risers. Samples will be collected from the sample port attached to each vent riser after purging the equivalent air volume of the riser pipe. Samples will be collected using an evacuated Summa canister and analyzed by USEPA Method TO-15/TO-15 SIM for targeted analytes that were detected in sub-slab soil vapor during the first monitoring event.

If office node indoor air sampling concentrations exceeding MTCA industrial screening levels are detected or supplemental PID inspections indicate a breach in the membrane barrier, corrective actions will be performed.

**Data Evaluation and Indoor Air Sampling**

Indoor air samples will be collected during the second sub-slab monitoring event described above. Indoor air samples will be collected following Washington State Department of Ecology (Ecology) VI assessment guidance (Ecology 2018) and the field procedures are presented in the IAWP. Samples collected during the second monitoring event will be analyzed by USEPA Method TO-15/TO-15 SIM for the targeted list of analytes detected in soil vapor during the first round of sub-slab sampling. Within each building, one air sample will be collected from within each office node and from within each warehouse space. A survey of materials stored and chemicals used in each building will be conducted concurrent with indoor air sample collection. An ambient air background sample will also be collected in the drive aisle between the buildings. The samples will be collected when the HVAC is not operational and all doors are closed to obtain worst-case sample results.

**REPORTING**

The results of additional VI assessment will be presented to Ecology in a summary memorandum, which will include the results of analytical data and concentrations predicted by modeling, compared to the applicable MTCA industrial screening levels and cleanup levels. Recommendations for additional mitigation, if determined to be necessary by the VI assessment, will also be presented in the summary memorandum.

**REFERENCES**

Floyd|Snider. 2017. *Interim Action Work Plan, 1514 Taylor Way Development*. Prepared for Avenue 55, LLC. June.

_____. 2018. *Summary of Soil Vapor Survey Data and Vapor Mitigation Plan for the 1514 Taylor Way Site*. Memorandum from Tom Colligan and Kristin Anderson, Floyd|Snider, to Steve Teel, Washington State Department of Ecology. 8 June.

Washington State Department of Ecology (Ecology). 2018. *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. April.

**ATTACHMENTS**

Figure 1 Property Features and Previous Soil Gas Sample Locations

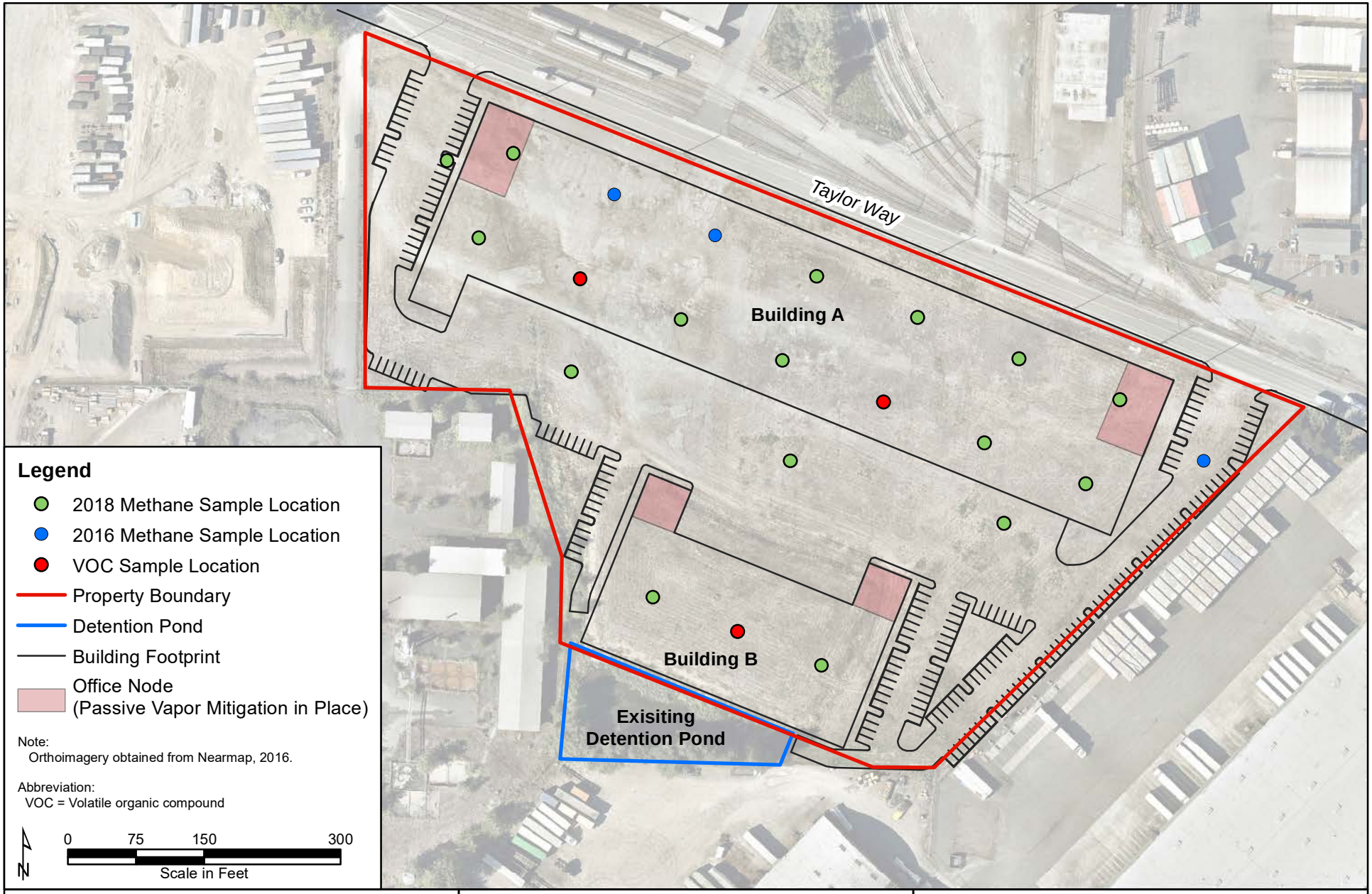
Figure 2 Taylor Way Methane Mitigation, Pad A

Figure 3 Taylor Way Methane Mitigation, Pad B

Figure 4 Taylor Way Methane Mitigation, Installation Detail

Attachment 1 Vapor Intrusion Field Sampling Standard Guideline

# Figures

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**Sampling Plan Addendum**
**for Vapor Intrusion Assessment**
**1514 Taylor Way Development**
**Tacoma, Washington**

Figure 1
Property Features and
Previous Soil Gas Sample Locations

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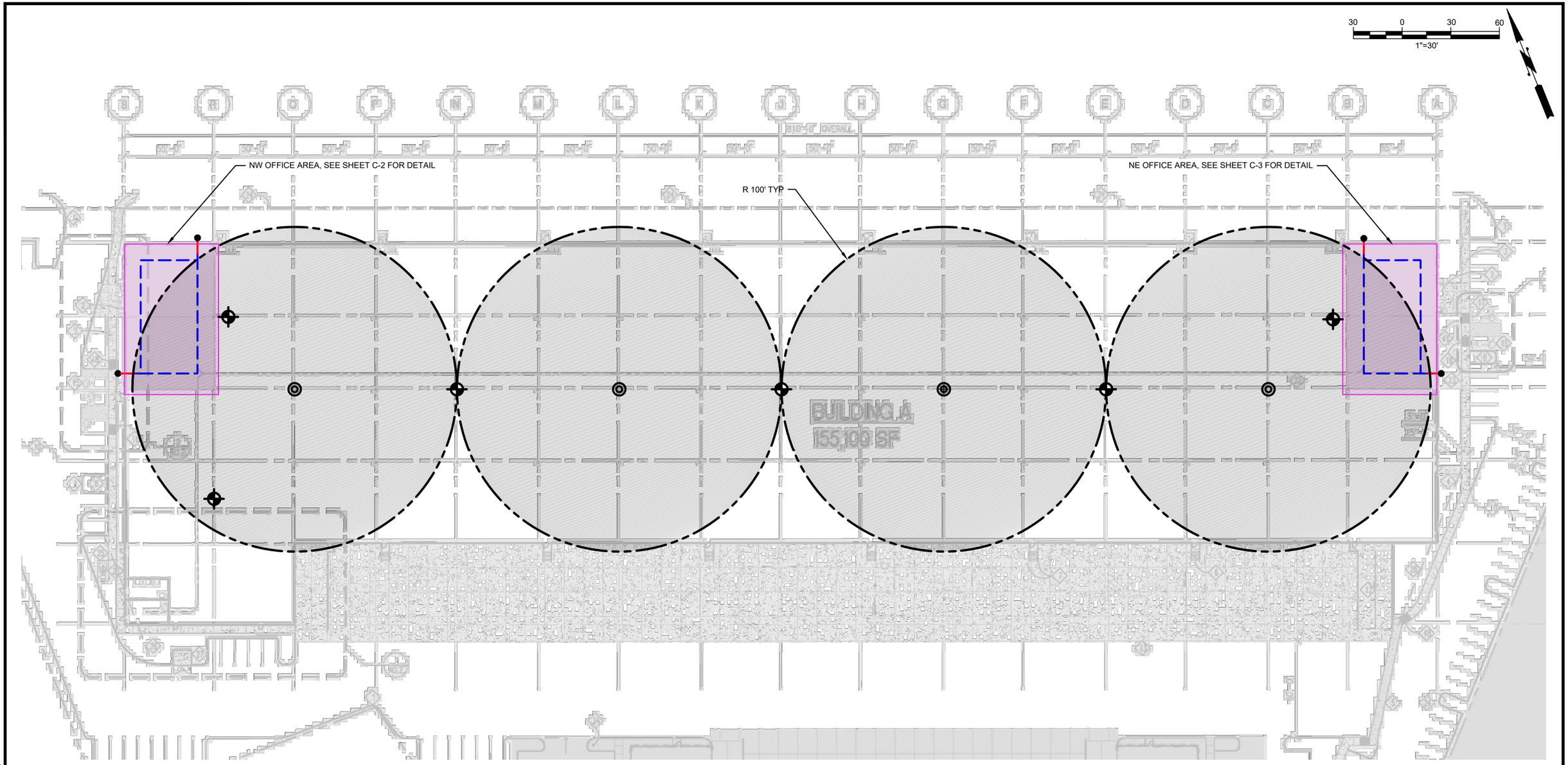
8/10/2018




## NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-8.
3. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
4. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
5. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

## LEGEND:

- 4" RISER VENT
- RISER VENT WITH BLOWER
- MONITORING LOCATION
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 4" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

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**WORK PLAN MEMO**

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ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

811 Know what's **below.** **Call** before you dig.

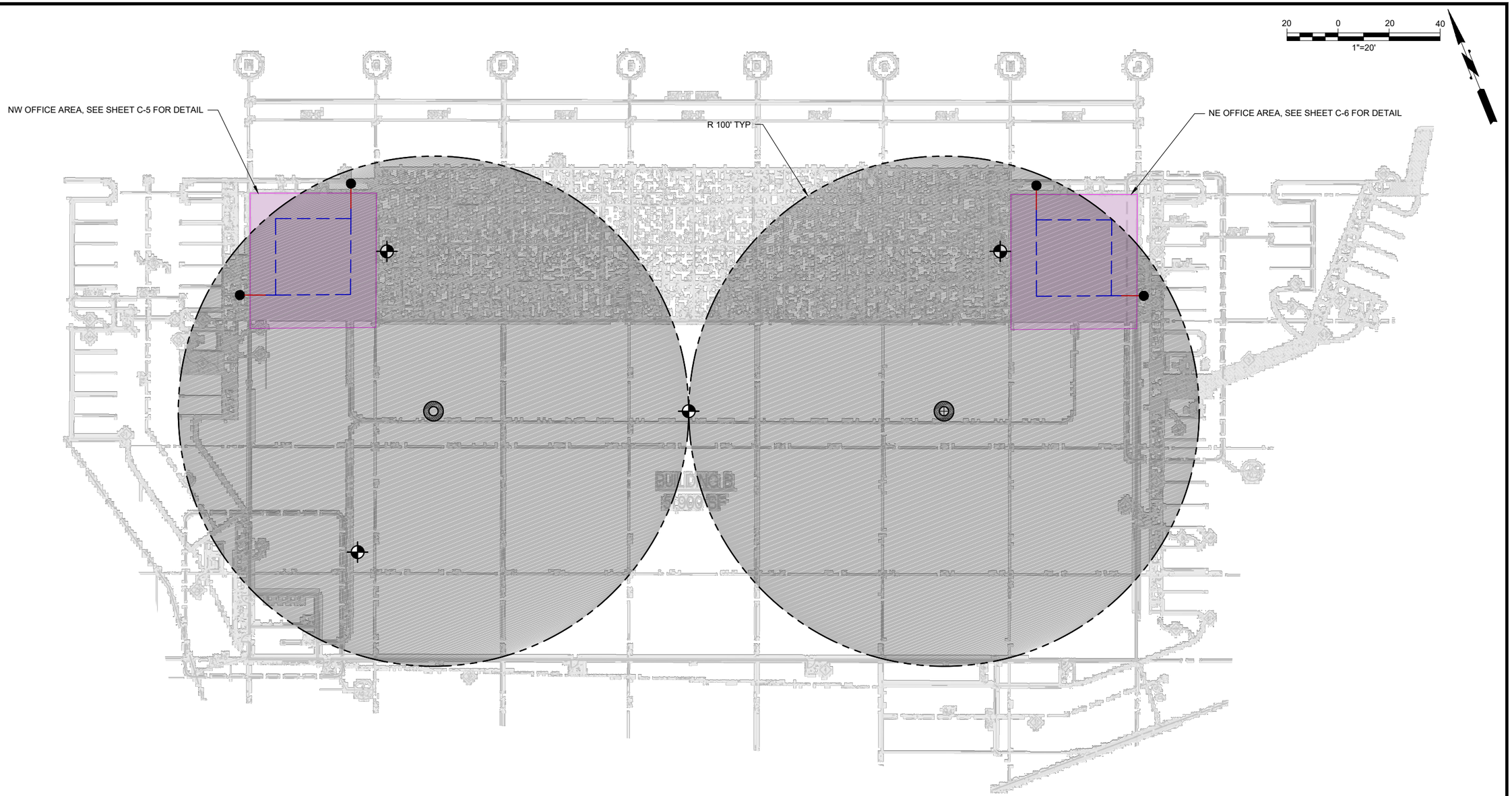
HERRERA

| | |
|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT |
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

PAD A

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: Figure 2
SHEET NO: 2 OF 4

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- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

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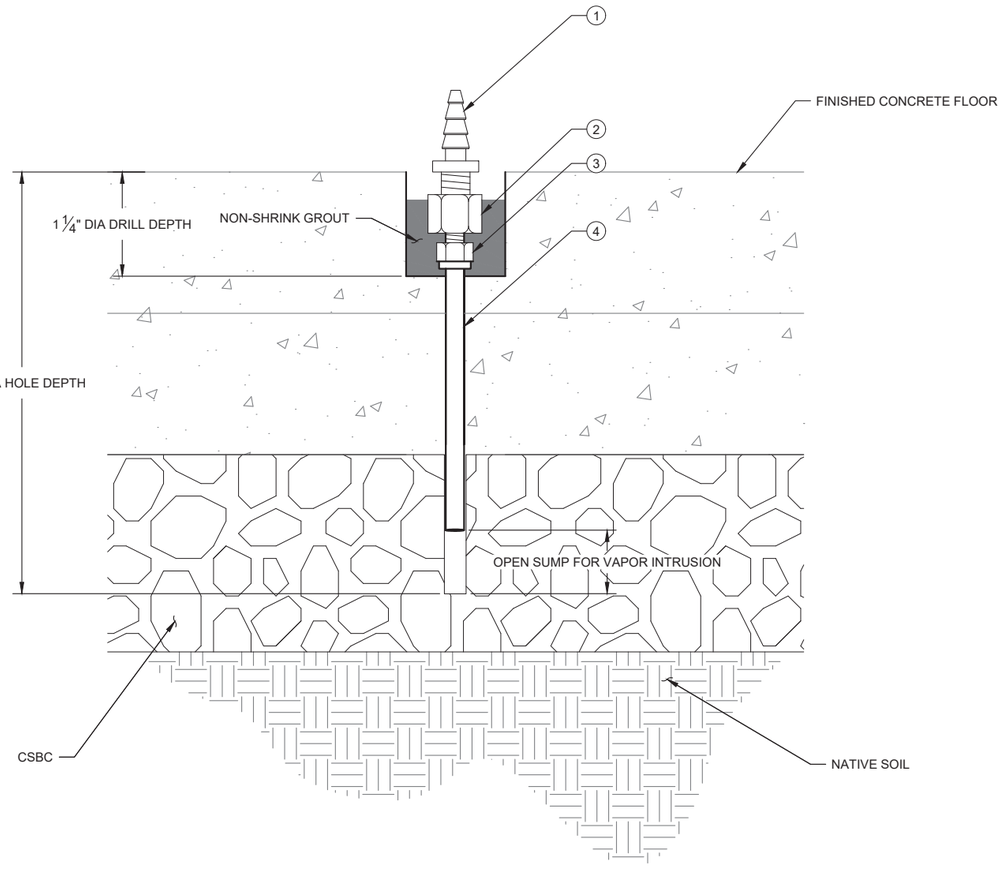
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

PAD B

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: Figure 3
SHEET NO: 3 OF 4




**DETAIL - SUB-SLAB VAPOR PROBE DURING MONITORING**

SCALE: NTS

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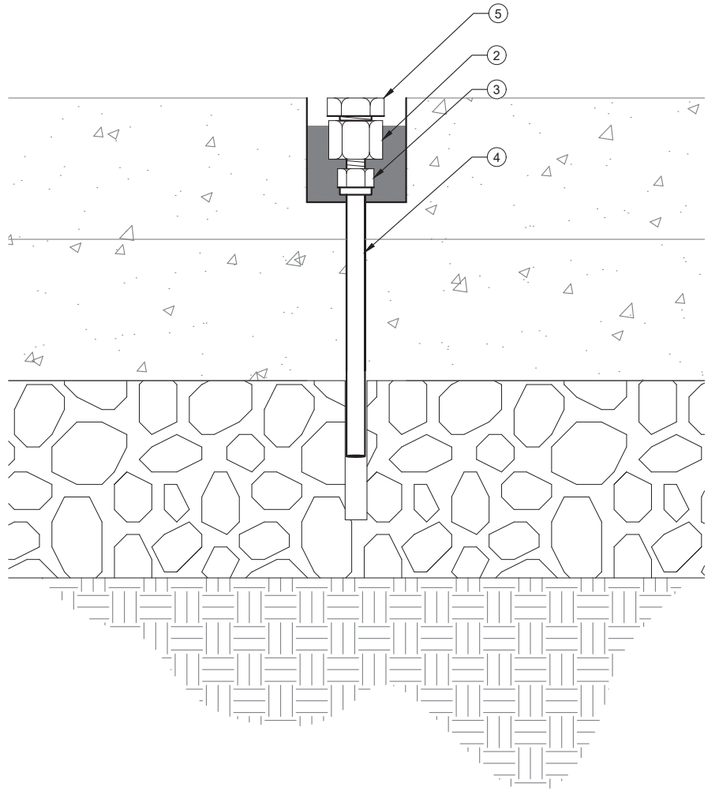


**DETAIL - SUB-SLAB VAPOR PROBE CAPPED**

SCALE: NTS

2 / -

## ITEMIZED NOTES:

1. STAINLESS STEEL HOSE BARB ADAPTER
2. SWAGELOK® MODEL # 400-7-4 STAINLESS STEEL, FEMALE CONNECTOR (TAPERED THREAD) 1/4" TUBE x 1/4" NPT
3. SWAGELOK® MODEL # 401-PC STAINLESS STEEL, 1/4" TUBE FITTING PORT CONNECTOR.
4. 1/4" INERT VAPOR TUBING
5. McMASTER-CARR MODEL # 4534K12 FLUSH MOUNT-HIGH PRESSURE STEEL HEX SOCKET PLUG, 1/4" PIPE, PTFE COATED, 1/4" HEX, 13/32" LENGTH

## INSTALLATION NOTES:

1. SELECT LOCATION FOR THE PERMANENT SUB-SLAB PROBE BASED ON THE OBJECTIVES OF THE PHASE OF WORK, PRESENCE OR POTENTIAL PRESENCE OF OBSTRUCTIONS AND INPUT FROM THE BUILDING OWNER.
2. USING A HAMMER OR CHISEL, CHIP AN "X" IN THE CONCRETE AS A STARTING POINT FOR DRILLING TO PREVENT THE BIT FROM WANDERING OFF THE DESIRED TARGET LOCATION.
3. DETERMINE THE DEPTH OF THE PROBE BODY AND MARK THIS LENGTH ON THE 1-1/4" MASONRY BIT WRAPPED WITH DUCT TAPED FLAP. THE FLAP WILL ACT AS A DEPTH GAUGE. WHEN THE DUCT TAPE FLAP HITS THE SLAB, THE BIT IS AT THE APPROPRIATE DEPTH. THE DESIRED DEPTH OF THE HOLE WILL BE DEPENDANT IF THE PROBE IS TO BE FLUSH WITH THE FLOOR OR SLIGHTLY COUNTERSUNK TO THE FLOOR.
4. USE THE ROTARY HAMMER DRILL WITH THE 1-1/4" BIT TO ADVANCE THE OUTER HOLE TO THE PROPER DEPTH AND VACUUM OUT THE CUTTINGS.
5. USING THE HAMMER DRILL WITH A 1/4" BIT, PLACE THE BIT IN THE CENTER OF THE 1-1/4" HOLE AND DRILL THROUGH THE SLAB INTO THE CSBC SUBSURFACE MATERIAL BY 3" to 6". A SIGNIFICANT INCREASE IN THE RATE OF PENETRATION BY THE DRILL WILL INDICATE THE BOTTOM OF SLAB HAS BEEN PASSED THROUGH.
6. VACUUM OUT THE DRILL CUTTINGS FROM IN AND AROUND THE HOLE. TEST FIT THE PROBE IN THE HOLE SO IT IS AT THE DESIRED LOCATION. ALTER THE HOLE DEPTH IF REQUIRED.
7. DAMPEN A PAPER TOWEL WITH DISTILLED WATER AND WIPE AWAY THE DUST FROM 1-1/4" HOLE AND WET THE SIDEWALLS. DO NOT ALLOW EXCESS WATER ON THE TOWEL GO INTO THE SUBSURFACE.
8. MIX A SMALL AMOUNT NON-SHRINK GROUT OR QUICK DRYING CEMENT AND POUR INTO THE ANNULAR SPACE AROUND THE PROBE. ALLOW THE CEMENT TO CURE FOR THE RECOMMENDED TIME FOR CURING BY THE MANUFACTURER OF THE CEMENT OR GROUT.
9. DETAIL 1 IS A TYPICAL CROSS SECTION OF THE PERMANENT SUB-SLAB PROBE DURING THE MONITORING PROCESS.
10. DETAIL 2 IS A TYPICAL CROSS SECTION OF THE PERMANENT SUB-SLAB PROBE CAPPED FLUSH WITH THE FINISH GRADE.

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| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

INSTALLATION DETAIL

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: Figure 4
SHEET NO: 4 OF 4

**Attachment 1**
**Vapor Intrusion Field Sampling Standard Guideline**

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Seattle, WA 98101
tel: 206.292.2078 fax: 206.682.7867

# F|S STANDARD GUIDELINE

# Vapor Intrusion

DATE/LAST UPDATE: December 2016

*These procedures should be considered standard guidelines and are intended to provide useful guidance when in the field, but are not intended to be step-by-step procedures, as some steps may not be applicable to all projects.*

*All field staff should be sufficiently trained in the standard guidelines for the sampling method they intend to use and should review and understand these procedures prior to going into the field. It is the responsibility of the field staff to review the standard guidelines with the field manager or project manager and identify any deviations from these guidelines prior to field work. When possible, the project-specific Sampling and Analysis Plan should contain any expected deviations and should be referenced in conjunction with these standard guidelines.*

## 1.0 Scope and Purpose

This standard guideline provides details necessary to complete vapor intrusion monitoring, which may include soil vapor point and sub-slab installation, soil vapor point monitoring and/or sampling, indoor air sampling, and remediation system compliance monitoring. Field screening for volatile organic compounds (VOCs) is most often conducted with a photoionization detector (PID) and confirmed via analytical sample collection. The most common sampling methods are included herein. These guidelines are designed to meet or exceed guidelines set forth by the Draft Washington State Department of Ecology's (Ecology's), *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* (Ecology 2015 and 2016a). In addition, refer to Ecology's *Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion: Implementation Memorandum No. 14* (Ecology 2016b) and the U.S. Environmental Protection Agency's (USEPA's) *Technical Guide For Addressing Petroleum Vapor Intrusion At Leaking Underground Storage Tank Sites* (USEPA 2015). Defining the lateral and vertical inclusion zones will determine if soil vapor sampling is required. The Interstate Technology and Regulatory Council (ITRC) online guidance for soil vapor intrusion (ITRC 2014) is another good source of information.

## 2.0 Equipment and Supplies

The following is a list of typical equipment and supplies necessary to complete vapor intrusion monitoring. It is important to note that this list is for a typical project; site-specific conditions may warrant additional or different equipment for completion of the work.

**Sub-Slab and Soil Vapor Point Installation:**

- Rotary hammer drill
- Drill bit
- Vapor point (AMS or similar)
- Stainless steel (SST) dummy tip (optional)
- Teflon™, nylon, or stainless steel tubing
- Sand pack
- Bentonite chips
- Protective cover for permanent point
- Swagelok® on/off valve (optional)
- Caps or compression fittings
- Quick set (concrete) or hydraulic cement
- Paper towels
- Nylon ferrules
- Shop vac

**Soil Vapor Point or Remediation System Screening and/or Sampling:**

- PID
- Connector
- Teflon™ or nylon tubing
- SKC air sampling pump or peristaltic pump
- Tedlar® bag or SUMMA® canisters
- Two adjustable wrenches (to tighten SUMMA® canister connections)
- Duplicate sampling (as necessary if duplicate sample collection is required)
- Soil gas manifolds
- Ferrules/fittings
- Helium (or other detection gas if leak detection is necessary)

- Helium detector (if leak detection is necessary with helium)
- Soil vapor sampling sheet (enclosed)

**Indoor Air Sampling:**

- PID
- Regulator
- SUMMA® canisters (6-liter, lab certified)
- Sampling cane (optional)
- At least two adjustable wrenches
- Indoor air building survey form (enclosed)

## 3.0 Standard Procedures

Soil vapor samples and/or indoor air samples should be collected from a sufficient number of locations to assess the presence of VOCs and potential exposure to workers or occupants of potentially impacted buildings or future building locations.

### 3.1 PRE-SCREENING ASSESSMENT

When completing a vapor intrusion survey or indoor air sampling, it is important to complete a pre-sampling survey to document potential activities or storage items that may cause interference with sample results. Some important things to note (list is not comprehensive):

- If smoking has occurred in the building
- Storage of potential contaminants (cleaners, fuels, paints, or paint thinners, etc.)
- HVAC system operation (on or off)
- Temperature and weather (wind direction, barometric pressure, etc.)
- Vehicle maintenance or industrial activities on the property or in the immediate vicinity (especially upwind)
- If new carpet or furniture is present

A pre-sampling soil vapor building survey form can be found at the end of this document. Be mindful of your surroundings and make a comprehensive list of potential factors that may influence sample results.

### 3.2 SOIL VAPOR POINT INSTALLATION

Soil vapor points can be installed along the outside perimeter of a building or in the lowest level of a building directly through the slab (or beneath the floor into the subsurface if there is not a

slab). It is important to evaluate the presence of utilities prior to drilling into the subsurface or through a concrete slab.

If the sampling point is for one time use, tubing inserted into a hole drilled in the slab is sufficient. However, if the sampling is to be part of a long-term monitoring program, a more robust sampler, such as a Geoprobe or AMS probe for permanent soil gas point is recommended. Four different methods for installing soil vapor installation points are described here.

1. For temporary sub-slab points:
    a. Drill a hole into the subsurface. Using a rotary hammer drill and a 3/8-inch drill bit (typical diameter size but not necessary), drill a hole through the concrete floor slab of the building and into the sub-slab material to some depth (e.g., 7 to 8 centimeters [cm] or 3 inches). Drilling into the sub-slab material will create an open cavity, which will prevent obstruction of the tubing intake by small pieces of gravel. Once the thickness of the slab is known, the tubing will be cut to ensure that the probe tubing does not reach the bottom of the hole in order to avoid obstruction with sub-slab material. Sample tubing can be placed directly into the sub-slab. Evaluate and note the sub-slab conditions.
    b. Care should be taken to reduce cross-contaminating sub-slab vapor and indoor air vapor. This may be done by sealing the sample point with VOC-free hydraulic cement, hydrated bentonite, or with VOC-free putty to the top of the slab. Once sealed, wait 15 to 30 minutes before sampling.
2. Suggested installation guidelines for temporary outdoor soil gas points using a rotary hammer and drill bit:
    a. Manufacturers, such as Geoprobe or AMS, make soil gas implant systems designed for use with their equipment. Stainless steel or polyvinyl chloride (PVC) screen can also be used to construct an appropriate soil gas point. The probe screen will be fitted with a Swagelok® or similar fitting and connected to a length of 0.25-inch outer diameter, rigid wall nylon or Teflon™ tubing that will be above grade. Refer to the manufacturer or driller's instructions for specific details regarding assembly and deployment.
    b. To seal the point, the implant should be surrounded with a clean sand pack. Concrete (VOC-free hydraulic cement preferred) should be used above the seal to the top of the slab. Placement of some sort of cap or protective device is recommended if the sampling point will remain in place for some time after the soil gas sample is collected. Once sealed, wait 15 to 30 minutes before sampling.
3. Suggested installation guidelines for outside permanent points installed with a Geoprobe rig or hand auger:
    a. Advance the boring using a geoprobe or hand auger to the required maximum depth. Install a 6-inch long by 0.75-inch diameter stainless steel screen that is capped on the bottom end and fitted with a Swagelok® fitting connected on the

other end (or similar approved screen or soil vapor point). Attach a length of 0.25-inch outer diameter rigid wall nylon or Teflon™ tubing to the probe screen that will be above grade. The above grade end of the probe should be fitted with a stainless steel Swagelok® on/off control valve or similar valve (optional), which is used to prevent short-circuiting of ambient air into the probes and to conduct closed-valve tests. Teflon™ tape should be used on threaded joints to ensure a good seal. Depending on the work plan, it might be necessary to collect an air equipment blank sample through the vapor probe components prior to installation.

b. The 6-inch screen tip should be vertically centered in a 1-foot long interval containing standard sand pack, resulting in 3 inches of sand above and below the screen. The sand pack will be covered with a 1-foot interval of dry granular bentonite, which should be covered with at least 2 feet of pre-hydrated granular bentonite. The dry granular bentonite is emplaced immediately above the sand pack to ensure that pre-hydrated granular bentonite slurry does not flow down to the probe screen and seal it. The remainder of the borehole will be filled with pre-hydrated granular bentonite slurry (mixed at the surface and poured in) to approximately 12 inches below ground surface (bgs). The top portion should be completed with a 1-foot thick cement cap. A flush-mounted well box or other suitable protective cover should be installed to protect the nylon/Teflon™ tubing and on/off control valve.

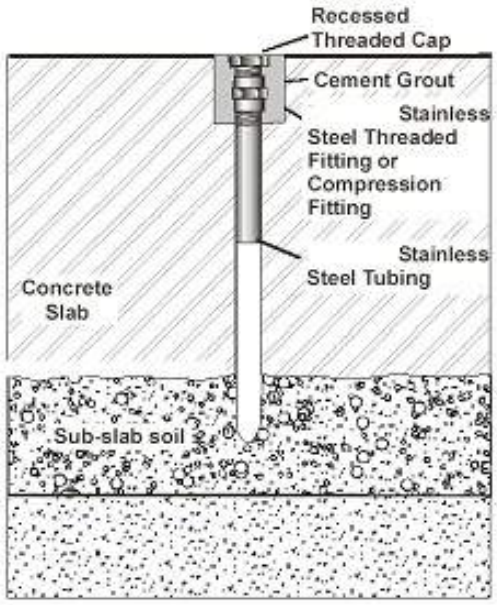
4. The following contains suggested equipment and installation guidelines for permanent sub-slab vapor points within a building; however, site-specific conditions may warrant additional or different equipment for completion of the work:

   a. To install the sub-slab vapor probes, a rotary hammer drill will be used to create a "shallow" hole (e.g., ¼-inch deep) that partially penetrates the slab (do not completely penetrate the slab). A portable vacuum can be used to remove the drill cuttings from the hole without compromising the soil vapor samples. Next, a smaller diameter "inner" hole (e.g., 0.8 cm or 5/16 inch diameter) will be drilled through the remainder of the slab and into the sub-slab material to some depth (e.g., 7 to 8 cm or 3 inches). Drilling into the sub-slab material will create an open cavity which will prevent obstruction of the probes by small pieces of gravel. Once the thickness of the slab is known, the tubing will be cut to ensure that the probe tubing does not reach the bottom of the hole and in order to avoid obstruction with sub-slab material.

   b. Each sub-slab vapor point should consist of vacuum-rated Nylon, Teflon™, or stainless steel tubing with ¼-inch outer diameter by 0.15-inch inner diameter, and stainless-steel compression to thread fittings (e.g., ¼-inch outer diameter Swagelok® (SS-400-7-4) NPT female thread connectors or similar equipment). This will be capped with sub-slab tamper resistant cap or other similar protective caps that will be inset into the floor to avoid trip hazards. When time to sample, the sub-slab tamper resistant cap will be removed and Nylon tubing will be attached

to the sub-slab vapor point with a ¼-inch out diameter (SS-400-1-4) male NPT. Prior to the installation of one of the sub-slab vapor probes, an air equipment blank sample will be collected if required by the work plan (See Section 3.4.3).

c. Teflon™ tape should be used with all stainless steel treads. All fittings should be attached prior to installing the probe in the sub-slab. A sub-slab tamper resistant cap will be used to ensure that the top of the probe is flush with the surface so as not to interfere with day-to-day use of the building. Portland cement can be used as a surface seal and allowed to cure for at least 24 hours prior to sampling. Hydraulic cement may also be used if free of VOCs, and requires less cure time (typically less than one hour) prior to sample collection. A typical soil gas probe schematic is provided here for reference.




Sub-slab soil gas probe schematic (Source: Ecology 2016a)

## 3.3 SOIL VAPOR POINT SAMPLING USING TEDLAR® BAGS

The objective of the vapor sampling procedures is to collect representative samples of the targeted media and analyze the gas for the presence of VOCs. Typically, a low volume air pump is used to pull a sample through the sampling train.

1. Connect proper tubing to your sampling point and to your low volume air pump.
2. Purge for 3 to 5 minutes to ensure that you are collecting a representative sample.
3. After purging, connect your Tedlar® bag to your air pump and collect your sample (Note: Tedlar® bags should be filled at a rate of approximately 5 liters per minute).
4. A PID is typically used in conjunction with sample collection in a Tedlar® bag.
   a. Connect the PID probe to the sample container using a section of tubing
   b. Use the PID to read the organic vapor level present in the sample.

Soil Vapor samples are typically collected into 1-liter Tedlar® bags and have a short (typically less than 72-hours) holding time. Samples collected into Tedlar® bags should be transported to the laboratory immediately under chain-of-custody protocol and stored in a dark container at ambient temperature during transport out of direct UV-light. Do not ship Tedlar® bags to the laboratory using an air transportation method as the pressure could compromise the sample or the bag. If air transport is necessary, do not completely fill the Tedlar® to avoid bursting. Soil vapor grab samples can also be collected into 1-liter SUMMA® canisters to provide additional holding time, lower laboratory method detection limits for some analytes, or sample delivery alternatives.

### 3.4 SOIL VAPOR AND SUB-SLAB SAMPLING WITH SUMMA® CANISTERS

Prior to soil vapor sampling, check all soil vapor sampling supplies to ensure the right sampling equipment arrived from the lab including duplicate Tees, if duplicate sample collection is necessary, and purging canisters. Conduct the following:

- Confirm that all SUMMA® canisters have at least 27 to 30 inches of mercury (in. Hg) prior to going out in the field to sample.
- Check and record all manifold and SUMMA® canister tags and numbers.
- Make sure all connections on the SUMMA® canisters and manifolds are tight.
- Order Helium (or other tracer gas) if needed and rent a helium detector.

Once the sub-slab or soil vapor probes are installed and the concrete well seal at each vapor point has fully cured, vapor sampling activities may commence (ideally a minimum of 2 hours is necessary for probe equilibration, depending on surface seal cure time). Alternatively, existing monitoring wells that are appropriately screened for a vapor intrusion assessment may be used. If indoor air samples will be collected, they may be collected simultaneously during the sub-slab sampling activities (details found in Section 3.6) if required by the work plan. If feasible, vapor sampling should not be conducted during or immediately after a significant rain event (i.e., greater than an inch of rainfall) due to the reduced effective diffusion coefficient and decrease in relative vapor saturation in the unsaturated zone. For sub-slab or soil vapor probe sampling, 1-liter lab certified SUMMA® canisters should be used in order to minimize the volume of soil vapor collected.

A closed-valve test should be conducted prior to soil vapor sample collection to check for leaks in the sampling train. A closed-valve test is conducted by capping the ends with proper Swagelok caps and/or closing any valves at the sampling point and purge canister. Once all ends are closed tight, turn the sampling canister valve on for 5 minutes. If the sampling train maintains its original vacuum for 5 minutes, the equipment will be assumed to be functional and there are no leaks. If the vacuum reading starts to drop, turn off the valves right away, check all connections, tighten if necessary, and re-test. If this passes, the only location that a leak can occur is from the soil ground seal around the vapor probe, which will be tested using helium or another tracer gas during sampling (See Section 3.4.1).

After the close-valve test, a minimum of three tubing volumes should be purged. Purging can be completed using a non-certified 6-Liter SUMMA® canister or a vacuum pump. The maximum flow rate during purging will not exceed the flow rate limit used for subsequent sampling and care will be taken not to over purge. An excel spreadsheet to help calculate tubing volume and purging time can be found at the end of this document.

After the sampling train has been purged, sub-slab soil vapor samples will be collected over a 10 minute period at a flow rate of less than 167 milliliters per minute (ml/min). The flow rate will be controlled by a flow regulator, which is set by the lab. Sub-slab soil vapor samples will be collected in laboratory-certified and pre-evacuated 1-liter SUMMA® canisters. Each SUMMA® canister will be supplied with an analytical test report certifying that the canister is "clean" to concentrations less than the respective method detection limits (MDLs). Each canister will be equipped with a pre-calibrated flow controller sampling train to allow collection of the desired sample. Prior to collecting the samples, the SUMMA® canister ID numbers will be recorded in the field notebook along with the initial canister vacuums, prior to sampling.

Soil vapor samples will be collected per the following steps:

1. Opening the valve on the top of the SUMMA® canister and recording the time in the log book;
2. Observing the vacuum gauge on the sampling train to ensure that the vacuum in the canister is decreasing over time;
3. Shutting off the valve once the vacuum gage reads between 4.0 and 5.0 inches of mercury (in. Hg).

### 3.4.1 Leak Testing

In addition to soil gas sampling activities, leak testing may be required at sampling locations and should be conducted using the following soil gas sampling set-up procedures:

- Place a large plastic bag (or other acceptable shroud) around the SUMMA® canister, sampling apparatus, and vapor probe.
- Cut a small hole in the bag to allow tubing to be inserted to introduce tracer gas, such as helium, and to subsequently fill the plastic bag.
- Keep the tracer gas (i.e., helium) concentration in the bag at 10 percent by volume or higher.

Detections of the tracer gas in the soil gas samples would indicate that the canister, valves, or ground surface seal to the sample probe have potentially leaked ambient air into the sample. Small amounts of sample train leakage is permissible, however, the leak percentage should not exceed 10 percent of the soil gas results. If the leak percentage exceeds 10 percent, the sampling point may have to be resampled. The integrity of the soil vapor samples can be assessed by estimating the percent leakage as shown here in micrograms per square meter ($\mu g/m^3$):

$$\% \text{ leakage} = 100 \times \frac{\text{helium concentration in soil vapor sample } [\mu g/m^3]}{\text{average helium concentration measured inside the shroud } [\mu g/m^3]}$$

Tracer gas leaks should not occur if the sampling train passes a properly performed closed-valve test and given the low flow rate of 167 ml/min.

### 3.4.2 Final Readings

Once the sampling is completed and the final vacuum is recorded, the sampling train will be removed from the canister and a Swagelok® cap will be tightly fitted to the inlet port of the canister. A PID can be used to record vapor readings from the manifold connection and logged in the notebook and/or soil vapor sampling sheet (enclosed). In addition, the initial canister vacuums, vacuum testing times, purging times, purged volumes, helium readings, sampling starts and times, final vacuum readings, and PID readings should be recorded on a vapor sampling sheet. Some of this information will also be required on the chain-of-custody.

### 3.4.3 Equipment Blank

Occasionally, the work plan requires an equipment blank to be collected. An equipment blank can be conducted by collecting a sample of clean air or nitrogen through the probe materials before installation in the ground. Analysis of the equipment blank can provide information on the cleanliness of new materials. Clean stainless steel, Nylon or Teflon® tubing and a certified regulator should be used. Lab-certified canisters (the sample canister and the source canister/cylinder, if applicable) or Tedlar® bags can be used to collect an equipment blank.

## 3.5 USE OF MONITORING WELLS FOR SOIL GAS SAMPLING

While dedicated soil gas probes are typically used to collect soil gas samples, existing monitoring wells that are appropriately located and screened can also be used for this purpose, with limitations. This is an advantage when evaluating the risk of vapor intrusion solely from contaminated aquifers (as compared to contaminated vadose zone soil) as the soil gas that will be sampled can reflect a soil gas sample that lies close to the zone of saturation and represents a worse case condition for equilibrium partitioning of contamination in groundwater to the gas phase. Also, monitoring wells are typically constructed at a deeper depth than soil vapor probes and are less influenced by changes in barometric pressure. They are also inherently constructed to be well sealed against breakthrough from atmospheric air (while purging and sampling). For an existing well to be used for soil gas sampling, it must have at least 2 to 3 feet of open screen above the water table during sample collection.

The main disadvantage of using existing monitoring wells is that the required purge volume would be much greater because of the significantly larger diameter of the well screen as compared to probes. This requires the use of a larger air pump or small blower instead of the SKC hand pump or peristaltic pump. While purging, care must be taken to minimize the vacuum in the well casing which may be large enough to raise the water column high enough to cover the exposed well screen and invalidate the use of the well for sampling soil gas. Appropriate

temporary fittings will need to be installed to allow the reduction of the well casing sufficient to allow connection to the collection tubing.

### 3.6 INDOOR AIR SAMPLE COLLECTION

Indoor air samples are typically collected into 6-liter SUMMA® canisters, and can either be a grab (not often recommended) or time weighted samples. For time weighted samples, the laboratory will provide preprogrammed flow controllers for the samples for your desired sample duration. An 8-hour flow controller is the most common to assess typical working conditions or to provide a time-weighted average (TWA) to assess residential risk (a 24-hour flow controller may also be used for residential assessments). SUMMA® canisters should be placed in an area that is close to the breathing zone (i.e., 3 to 4 feet above the floor level), a sampling cane can be connected to the SUMMA® canister to sample indoor air at breathing zone height. As a basic guideline and starting point, indoor air samples should at a minimum be collected from the basement (if applicable), first floor living or work area, and from outdoors (ambient/upwind). Other site-specific factors will influence the specific placement location of the SUMMA® canisters, such as proximity to subsurface source area(s) or penetrations through the slab or foundation.

#### 3.6.1 Connection Guidelines

Refer to specific guidelines provided by the laboratory, as equipment can be slightly different from lab to lab. It is important to note the initial vacuum reading on the gauge as well as the post-sampling vacuum. For reference, initial vacuum should be between 27 and 30 inches of mercury, while post-sample vacuum should be between 4 and 5 inches of mercury. Sample collection start and finish times should also be recorded. After sample collection, the SUMMA® canister valve should be shut and the flow controllers should be disconnected from the SUMMA® canisters. Both the controller and the canister ID (unique laboratory tracking ID) should be recorded on the chain-of-custody and the samples should be packed appropriately for delivery to the laboratory following chain-of-custody protocol.

### 3.7 REMEDIATION SYSTEM VAPOR SAMPLE COLLECTION

Remediation systems that have a soil vapor extraction (SVE) component often require compliance monitoring to evaluate mass removal and effluent discharge limits. Both screening (with a PID) and sampling are routinely conducted during active operation. Tedlar® bags are often used to simplify SVE system screening. Fill a bag following the procedures described in this section and use a PID to measure the VOCs in the sample. Record the maximum observed concentration. Vapor samples for laboratory analysis are most often collected in 1-liter Tedlar® bags, but SUMMA® canisters can also be used. It is a good idea to fill out the label on the Tedlar® bag prior to sample collection.

If the sample port is under vacuum (i.e., SVE manifold or wellhead), it is often necessary to reduce the flow somewhat and to use a hand or mechanical pump to extract the vapor from the line. If the sample port is under a high vacuum, it may be necessary to step down the flow (i.e., close

the flow valve) in order to collect a sample. Follow steps in Section 3.3 for sample collection and delivery.

If the sample port is under pressure (i.e., SVE system discharge), the sample can be collected without the use of a pump. Simply attach a clean piece of tubing securely to the sample port, connect the Tedlar® bag to the tubing, open the Tedlar® bag, slowly open the sample port valve, and be careful not to overfill the bag. Remove the Tedlar® bag when full, close the Tedlar® bag (do not over-tighten), and close the sample port valve. Follow steps in Section 3.3 for sample delivery.

## 4.0 Field Documentation

Soil vapor probe and monitoring point installation field activities should be documented in field notebooks and completion diagrams or boring logs should be completed to document construction. Information recorded will include personnel present, total depth, type and length of implant or screen, screen and filter pack intervals, bentonite seal intervals and surface completion details. Photographs of construction activities should be taken. After probe and monitoring point installation is complete, location coordinates should be recorded with a global positioning system (GPS). If GPS cannot be used (i.e., location within a building), it is important to document the location by recording representative measurements to fixed points.

All sampling activities must be documented in a field notebook and/or on field forms appropriate for the sampling activity. Information recorded will include at a minimum personnel present, weather conditions, date, and time of sample collection, length of sample purge time, and any deviations from the project's work plan or sampling and analysis plan.

## 5.0 References

Interstate Technology Regulatory Council (ITRC). 2014. Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management. <http://www.itrcweb.org/PetroleumVI-Guidance/>. October.

Washington State Department of Ecology (Ecology). 2015. Vapor Intrusion Table Update. (Replaces Table B-1 of Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State). <http://www.ecy.wa.gov/programs/tcp/policies/VaporIntrusion/Vapor%20Intrusion%20Table%20update%20April%206%202015.xlsx>. 6 April.

_____. 2016a. *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. Review Draft. Prepared by the Toxics Cleanup Program. Publication No. 09-09-047. Originally published October 2009; revised February.

_____. 2016b. *Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion: Implementation Memorandum No. 14*. Publication No. 16-09-046. 31 March.

U.S. Environmental Protection Agency (USEPA). 2015. *Technical Guidance for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites*. Prepared by the Office of Underground Storage Tanks. EPA 510-R-15-001. June.

**Enclosures:** Indoor Air Building Survey Form
Purge Volume Calculations during Soil Vapor Sampling
Soil Vapor Sampling Sheet

**INDOOR AIR BUILDING SURVEY FORM**

**Date:**

**Site Name:**

**Title:**

**Building Use:**

Occupants: _____

Building Address: _____

Property Owner: _____

Contact's Phone: _____

Number of Occupants: _____

Business or Residential: _____

**Building Characteristics**

Building Type: ☐ Residential ☐ Multifamily ☐ Office

☐ Commercial ☐ Industrial ☐ Mall

Describe Building:_____

_____

Number of Floors Below Grade: _____ ☐ Basement ☐ Slab-On-Grade ☐ Crawl Space

Bldg Dimensions: Width:_____ Length: _____ Height: _____

Basement Floor: Dirt / Concrete / Painted? Foundation Walls: Concrete / Cinder Blocks / Stone

**VENTILATION SYSTEM**

☐ Central Air Conditioning ☐ Mechanical Fans ☐ Bathroom Vans

☐ Conditioning Units ☐ Kitchen Range Hood ☐ Outside Air Intake

Other:_____

**HEATING SYSTEM**

☐ Hot Air Circulation ☐ Hot Air Radiation ☐ Wood ☐ Steam Radiation

☐ Heat Pump ☐ Hot Water Radiation ☐ Kerosene Heater ☐ Electric Baseboard

Other:_____

**Outside Contaminant Sources**

Nearby surrounding property sources: Gas Stations / Emission Stacks

Soil Contamination: Petroleum Hydrocarbons / Solvents

Heavy Vehicle Traffic: Yes / No

**Indoor Contaminant Sources**

Identify all potential sources found in the building (including attached garages), the location of the source (floor and room), and whether the item was removed from the building 48 hrs prior to indoor sampling event. Any ventilation implemented after removal of the items should be completed at least 24 hours prior to the commencement of the indoor air sampling event.

| Potential Sources | Location(s) | Removed (Yes / No / NA) |
|---|---|---|
| Gasoline storage cans | | |
| Gas powered equipment | | |
| Kerosene storage cans | | |
| Paints / Thinners / Strippers | | |
| Cleaning solvents / Dry cleaners | | |
| Oven cleaners | | |
| Carpet / upholstery cleaners | | |

| | | |
|---|---|---|
| Other house cleaning products | | |
| Moth Balls | | |
| **Potential Sources** | **Location(s)** | **Removed (Yes / No / NA)** |
| Polishes / waxes | | |
| Insecticides | | |
| Furniture / floor polish | | |
| Nail polish / polish remover | | |
| Hairspray | | |
| Cologne / perfume | | |
| Air fresheners | | |
| Fuel tank (inside building) | | |
| Wood stove or fireplace | | |
| New furniture | | |
| New carpeting / New flooring | | |
| Hobbies – glues, paints | | |
| Other: _____ | | |
| Other: _____ | | |
| Other: _____ | | |

**SAMPLING INFORMATION**

Sampler(s) _____

☐ Indoor Air / Outdoor Air ☐ Sub-slab ☐ Soil Vapor Point ☐ Exterior Soil Gas

☐ Tedlar® Bag ☐ Sorbent ☐ SUMMA® ☐ Other _____

Analytical Method: TO-15 / TO-17 / Other: _____

**WEATHER CONDITIONS**

Was there a significant rain event in the last 24 hours? Yes / No

Temperature: _____ Atmospheric Pressure: _____ Pressure: Rising or Falling?

Describe the general weather conditions: _____

Wind Speed and Direction: _____

## PURGE VOLUME CALCULATIONS DURING SOIL VAPOR SAMPLING

| Sample Tubing Purge | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tubing Length (feet)** | **Pi** | **Casing Radius (inches)** | **Area of Casing Radius ($Pi(R^2)$) (inches)** | **Length of casing (feet)** | **Conversion of feet to inches** | **Number of Casing Volumes to Purge** | **Conversion of cubic inches to ml** | **Purge Volume (ml)** | **Purge Volume (l)** | **Purge rate (ml/min)** | **Purge Time (min)** | |
| 5 | 3.141593 | 0.125 | 0.049087 | 5 | 60 | 1 | 16.387064 | 48.263888 | 0.048264 | 167 | 0.29 | |
| 5 | 3.141593 | 0.125 | 0.049087 | 5 | 60 | 3 | 16.387064 | 144.79166 | 0.144792 | 167 | 0.87 | |
| 5 | 3.141593 | 0.125 | 0.049087 | 5 | 60 | 7 | 16.387064 | 337.84721 | 0.337847 | 167 | 2.02 | |

| Annular Space Purge | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Annular Space Length (inches)** | **Pi** | **Boring Radius (inches)** | **Area of Boring Radius ($radius^2$)** | **Volume of Annular Space (inches)** | **Assumed Porosity of Sand Pack*** | **Air Filled Volume of Annular Space (cubic inches)** | **Number of Casing Volumes to Purge** | **Conversion of cubic inches to ml** | **Purge Volume (ml)** | **Purge Volume (l)** | **Purge rate (ml/min)** | **Purge Time (min)** |
| 12 | 3.141593 | 2 | 12.56637 | 150.7964 | 0.3 | 45.23893 | 1 | 16.387064 | 741.3333 | 0.741333 | 167 | 4.44 |
| 12 | 3.141593 | 2 | 12.56637 | 150.7964 | 0.3 | 45.23893 | 3 | 16.387064 | 2224 | 2.224 | 167 | 13.32 |
| 12 | 3.141593 | 2 | 12.56637 | 150.7964 | 0.3 | 45.23893 | 7 | 16.387064 | 5189.333 | 5.189333 | 167 | 31.07 |

| Summary of Purge Durations | |
|---|---|
| One Purge Volume | 4.73 |
| Three Purge Volumes | 14.18 |
| Seven Volumes | 33.10 |

**SOIL VAPOR SAMPLING SHEET**

Site Reference:
_____ Date: _____

Address:
_____ Personnel: _____

| | Vacuum Test | | Purging | | | | Helium | | Sampling | | | | PID | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil Vapor Sampling Point ID | Time Start Vacuum Testing | Time Stop Vacuum Testing | Time Start Purging | Time Stop Purging | Purging Rate (ml/min) | Total Volume Purged (ml) | Time of Helium Reading | Helium Reading (%) | Time Start Sampling | Time Stop Sampling | Canister Vacuum Before Sampling (in Hg) | Canister Vacuum After Sampling (in Hg) | Time of PID Reading | PID Reading | Notes |
| | | | | | 167 | | | | | | | | | | |
| | | | | | 167 | | | | | | | | | | |
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Notes:

FLOYD | SNIDER
strategy ▪ science ▪ engineering

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# Memorandum

**To:** Nick Acklam, Washington State Department of Ecology

**Copies:** Drew Zaborowski, Avenue 55; Scott Hooton, Port of Tacoma

**From:** Tom Colligan and Gabriel Cisneros, Floyd|Snider

**Date:** December 4, 2018

**Re:** **Summary of Sub-Slab Soil Vapor Assessment**
**1514 Taylor Way, Tacoma, Washington**

This memorandum summarizes the results of sub-sab soil vapor sampling performed in Buildings A and B at the 1514 Taylor Way redevelopment site (the Site) in Tacoma, Washington. The Taylor Way redevelopment site (Portside) is part of the larger Taylor Way and Alexander Avenue Fill Area Site. Redevelopment activities at Portside were performed consistent with the Interim Action Work Plan (Floyd|Snider 2017). The sub-slab vapor assessment sampling was performed in accordance with the approved Sampling Plan Addendum for Vapor Intrusion Assessment (Floyd|Snider 2018) submitted to Mr. Steve Teel of the Washington State Department of Ecology (Ecology) in August 2018. As described in that addendum, sub-slab assessment was determined to be needed based on results from soil gas samples collected prior to building construction. The addendum also described the installation of passive vapor barriers in the four office nodes of the two redevelopment warehouses. The results from the sub-slab sampling will be used to determine if further evaluation of indoor air quality is needed.

## SUB-SLAB SOIL VAPOR INSTALLATION AND SAMPLING

On September 10, 2018, Environmental Services Network Northwest, Inc., installed a total of 14 permanent sub-slab vapor sampling points in Buildings A and B after the slab foundations were poured in place. Eight sub-slab locations were installed in Building A and six locations were installed in Building B (Figures 1 and 2). The August 2018 sampling plan addendum proposed a total of 10 locations; however, the final number and locations of sub-slab points were adjusted based on recommendations provided by Ecology via email (Attachment 1). In general, the locations were selected to be representative of the prior volatile organic compound (VOC) detections in soil gas and at locations immediately adjacent to the office nodes, as well as general coverage. All vapor pin locations were placed outside the polyvinyl chloride (PVC) membrane and PVC piping installed under the office nodes.

Cox-Calvin & Associates, Inc., VAPOR PIN® points were used, and each point was constructed with a 1.5-inch extension and a flush mount, stainless-steel secure cover. The vapor pins extend

6 inches below the concrete floor slab in order to collect soil vapors accumulating directly under the slabs (Photograph 1 of Attachment 2). The standard operating procedure was followed during installation of the vapor pins (Attachment 3).

Prior to collecting soil vapor samples, the vapor pins were allowed 48 hours to equilibrate. Two sampling events were performed. The first event occurred on September 12, 2018, and the second sampling event occurred on October 24, 2018. All 14 locations were sampled during both events. Soil vapor samples were collected in accordance with Floyd|Snider's Standard Guideline for Vapor Intrusion.

Prior to collecting the samples, the soil gas sampling equipment was set up at each location and a closed valve test was performed. The sampling train was checked for leaks by capping the ends and closing the control valve at the vapor point, then opening the SUMMA® canister for a period of 5 minutes to see if vacuum was maintained. All sampling trains maintained their initial vacuum for at least 5 minutes during each sampling event.

After conducting closed-valve tests, at least three volumes were purged. Purging was completed using a 6-liter SUMMA canister with a flow rate less than 200 milliliters per minute (mL/min). After the sampling train was purged, soil gas samples were collected over a 5-minute period at a flow rate of less than 150 mL/min. Soil vapor samples were collected in 100-percent certified and pre-evacuated 1-liter SUMMA canisters supplied by Friedman & Bruya, Inc. (FBI) laboratory.

Soil vapor samples were collected per the following steps:

1. Open the valve on the top of the SUMMA canister and record the time in the logbook.
2. Observe the vacuum gauge on the sampling train to ensure that the vacuum in the canister is decreasing over time.
3. Shut off the valve once the vacuum gauge reads between 4.5 and 5.0 inches of mercury (inches Hg).

During the September 2018 sampling event, leak testing was performed at all sampling locations using the following soil gas sampling setup procedures:

1. A large plastic shroud was sealed around the sampling point.
2. A small hole was cut in the shroud to allow tubing to be inserted through it to introduce helium and to subsequently fill the shroud.
3. Helium was maintained at a concentration of 10 percent or greater within the plastic shroud. Detections of helium in the soil gas samples would indicate that the valve at the sampling point or sub-slab seal had potentially leaked ambient air into the sample. Helium was not detected in any location at the sample outlet during the September event, indicating that all vapor pin seals were tight and short circuits were not present; therefore, a helium leak test was not necessary during the second event in October 2018.

Once the sampling period was completed and the final vacuum was recorded, the sampling train was removed from the canister, and a Swagelok Company cap was tightly fitted to the inlet port of the canister. A photoionization detector (PID) was used to record vapor readings from the manifold connection, and the readings were logged in the notebook and soil vapor sampling sheet. The initial canister vacuums, vacuum testing times, purging times, purged volumes, helium readings, sampling starts and times, final vacuum readings, and PID readings were recorded on soil vapor sampling sheets, which are included in Attachment 4.

Soil gas samples were analyzed for the following:

- VOCs using U.S. Environmental Protection Agency (USEPA) Modified Method TO-15
- Volatile compounds by Method MA Air-Phase Hydrocarbons (APHs)

Additionally, during the September 2018 sampling event, helium was analyzed using ASTM D1946. Helium was not analyzed during the October 2018 event.

**SOIL VAPOR SURVEY FINDINGS**

The initial September 2018 sampling event detected the following VOCs at concentrations exceeding the Model Toxics Control Act (MTCA) Method C sub-slab soil gas screening levels listed on Ecology's Cleanup Levels and Risk Calculation (CLARC) website (Ecology 2015):

- 1,2,4-Trimethylbenzene (Building A in VP-1)
- 1,3-Butadiene (Building A in VP-8)
- Acetaldehyde (Building B in VP-11)
- Acrylonitrile (Buildings A and B in VP-8 and VP-14, respectively)
- APH EC9-12 aliphatics (Building A in VP-1)
- Naphthalene (Building A in VP-1)
- Trichloroethene (Building B in VP-14)

The greatest APH concentrations in soil gas were detected in Building A within the vicinity of VP-1, located adjacent to the eastern office location. APH EC9-12 aliphatics were detected in VP-1 at a soil gas concentration of 21,000 micrograms per cubic meter ($\mu g/m^3$), which exceeds the MTCA Method C sub-slab soil gas screening level of 10,000 $\mu g/m^3$.

However, upon resampling in October 2018, the sub-slab soil gas results indicated substantially lower concentrations of all detected analytes; none were at concentrations that exceeded their respective MTCA Method C sub-slab soil gas screening levels. As in the September 2018 soil gas results, the reporting limits for acrolein were greater than the screening level.

During the October 2018 sampling event, a lab air blank was collected at FBI. The following compounds were detected in the lab air blank:

- 1,3-Butadiene
- Acetone
- Chlorodifluoromethane
- Ethanol
- Hexane
- Isoprene
- Methylene chloride
- Toluene

Methylene chloride, ethanol, and acetone are used in the lab, and all soil gas samples were likely to have had minimal exposure to laboratory air during pressure checking requirements and processing activities. None of the compounds detected in the lab sample were detected in the soil gas samples at concentrations exceeding their respective MTCA Method C sub-slab soil gas screening levels.

All soil gas data are presented in Table 1, and laboratory reports are included as Attachment 5.

**JEM INPUTS AND RESULTS**

Per the Ecology vapor intrusion guidance (Ecology 2018), if concentrations are greater than the sub-slab screening levels during the Tier I vapor intrusion assessment, the reviewer will proceed to the Tier II assessment, which includes using the Johnson and Ettinger Model (JEM) to predict indoor air concentrations and risk. USEPA's online JEM worksheet (USEPA 2018) was used to predict a range of minimum to maximum concentrations in indoor air for each compound with concentrations that exceeded the MTCA Method C sub-slab soil gas screening level. Model results were then compared to indoor air cleanup levels, presented in the updated Table B-1 of the Ecology vapor intrusion guidance. Specific recommendations regarding the use of the JEM in this capacity are presented in Appendix D of the Ecology vapor intrusion guidance.

The highest concentration for each compound detected, including acrolein, was input in USEPA's online JEM worksheet. In addition, a conservative approach was taken by using default residential inputs for slab-on-grade floor thickness, crack width, average vapor flow rate into the building, average time for carcinogens and noncarcinogens, exposure duration, and exposure frequency. The property is zoned for Industrial Use under Pierce County Assessor's Building and Land Use records, and an indoor air exchange rate of 0.45 per hour was used to yield a conservative result. The actual dimensions for each Portside warehouse building were used as inputs.

The JEM results indicate that the highest predicted concentrations to indoor air for all compounds detected during the September 2018 sampling event are less than their respective MTCA Method C cleanup levels for indoor air. Additionally, all predicted cancer risks and hazard quotients are less than the target cancer risk of 1.0E-6 and 1.0, respectively, which indicate that adverse effects from vapors to indoor air are not likely to occur. JEM modeling results, using the above conservative approach and greatest concentrations, are shown in Table 2, and JEM inputs and modeling results are included as Attachment 6.

**SOIL GAS AND JEM RESULTS DISCUSSION**

The September 2018 sampling results indicate that several compounds, including APH EC9-12 aliphatics, were detected in soil gas at concentrations exceeding their respective MTCA Method C sub-slab soil gas screening levels. However, using conservative residential inputs, the JEM results for each compound indicate that there is not a risk to indoor air to occupants for either building. The October 2018 sub-slab sampling results indicate that all soil gas concentrations, including APH EC9-12 aliphatics, were less than their respective screening levels.

In August of 2018, Avenue 55 elected to install a passive vapor mitigation system in Buildings A and B, specifically under each of the office node locations of these large industrial warehouses. Based on the conservative JEM results and the October 2018 soil gas results, in conjunction with the passive vapor mitigation system installed beneath the office nodes, there is not a vapor risk to indoor air for occupants of the office nodes. Therefore, there is no need to monitor the performance (i.e., differential pressures) of the passive system, nor is there a need to collect indoor air vapor data to evaluate vapor intrusion risk to either building. If future sub-slab soil gas or indoor air sampling events are required, a reduced compound list should be used that will include only compounds that were detected at concentrations exceeding the laboratory detection limits. The reduced list is included as Table 3.

**REFERENCES**

Floyd|Snider. 2017. *Interim Action Work Plan, 1514 Taylor Way Development*. Prepared for Avenue 55, LLC. June.

_____. 2018. *Sampling Plan Addendum for Vapor Intrusion Assessment 1544 Taylor Way, Tacoma, Washington*. Prepared for Avenue 55, LLC. 10 August.

Washington State Department of Ecology (Ecology). 2015. *CLARC Master Table Spreadsheet.* <https://fortress.wa.gov/ecy/clarc/FocusSheets/CLARC%20Master%20Spreadsheet.xlsx>. July.

_____. 2018. *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. April.

U.S. Environmental Protection Agency (USEPA). 2016. EPA On-line Tools for Site Assessment Calculation, Screening Level Implementation of the Johnson and Ettinger Vapor Intrusion Model. <https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.html>. Last accessed 11/28/2018. 23 February.

**LIST OF ATTACHMENTS**

| | |
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| Table 2 | JEM Results |
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| Figure 1 | Sub-Slab Vapor Pin Locations in Building A (Herrera Environmental Consultants Figure) |
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# Tables

# Table 1
## Soil Gas Data

| | | | | Building A East Office Node | | | | | | | Building A Center | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-01 | | | VP-02 | | | | VP-03 | | VP-04 | | VP-05 | |
| | | | Sample ID | VP-01-091218 | VP-01-102418 | VP-01-102418 Dup | VP-02-091218 | VP-02-091218 Dup | VP-02B-091218 | VP-02-102418 | VP-03-091218 | VP-03-102418 | VP-04-091218 | VP-04-102418 | VP-05-091218 | VP-05-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 10/24/2018 | 09/12/2018 | 09/12/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | | | | | | | |
| APH EC5-8 aliphatics | NA | 200,000 | µg/m³ | 11,000 | 3,600 | 3,200 | 2,800 | 2,000 | 3,300 | 2,200 J | 1,100 | 790 | 820 | 480 J | 1,400 | 750 J |
| APH EC9-10 aromatics | NA | -- | µg/m³ | 2,700 | 170 | 160 | 82 U | 82 U | 82 U | 82 UJ | 82 U | 82 U | 82 U | 82 UJ | 82 U | 82 UJ |
| APH EC9-12 aliphatics | NA | 10,000 | µg/m³ | 21,000 J | 2,000 | 1,700 | 330 | 310 | 420 | 340 J | 180 | 370 | 130 | 140 J | 360 | 370 J |
| Benzene | 71-43-2 | 110 | µg/m³ | 28 | 5 | 4.9 | 7 | 5.2 | -- | 8.4 | 1.1 U | 2 U | 1.1 | 1.1 U | 1.1 U | 1.1 U |
| Ethylbenzene | 100-41-4 | 33,000 | µg/m³ | 75 | 6.7 | 6.7 | 2.8 | 1.8 | -- | 2.2 | 1.4 U | 2.7 U | 1.4 U | 1.4 U | 1.7 | 1.4 U |
| m,p-Xylene | 179601-23-1 | -- | µg/m³ | 270 | 19 | 18 | 8.4 | 5.3 | -- | 4.6 | 2.9 U | 5.4 U | 2.9 U | 2.9 U | 7.4 | 3.3 |
| Naphthalene | 91-20-3 | 25 | µg/m³ | 33 | 5.5 | 3.6 | 1.2 | 0.59 JB | -- | 0.35 JB | 0.57 JB | 0.75 JB | 0.71 JB | 0.43 JB | 1 JB | 0.5 JB |
| o-Xylene | 95-47-6 | 3,300 | µg/m³ | 120 | 8.1 | 8 | 3 | 1.8 | -- | 1.4 U | 1.4 U | 2.7 U | 1.4 U | 1.4 U | 2.4 | 1.4 U |
| Toluene | 108-88-3 | 170,000 | µg/m³ | 62 | 11 | 12 | 11 | 7.9 | -- | 7.1 | 1.8 | 4 | 1.7 JB | 2.1 | 4.9 | 4 |
| 1,1,1-Trichloroethane | 71-55-6 | 170,000 | µg/m³ | 15 | 9.2 | 8.8 | 16 | 11 | -- | 9.2 | 5 | 3.7 | 4 | 2 | 8.5 | 6.4 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 14 | µg/m³ | 1.4 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | -- | 0.45 U | 0.45 U | 0.86 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U |
| 1,1,2-Trichloroethane | 79-00-5 | 6.7 | µg/m³ | 1 | 0.18 U | 0.18 U | 0.65 | 0.18 U | -- | 0.18 U | 0.18 U | 0.34 U | 0.18 U | 0.18 U | 0.18 U | 0.18 U |
| 1,1-Dichloroethane | 75-34-3 | 520 | µg/m³ | 6 | 5 | 5.1 | 2.6 | 1.9 | -- | 3.1 | 1.3 U | 2.5 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U |
| 1,1-Dichloroethene | 75-35-4 | 6,700 | µg/m³ | 4 U | 1.8 | 1.8 | 1.3 JB | 1.3 U | -- | 1.3 U | 1.3 U | 2.5 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U |
| 1,2,3-Trimethylbenzene | 526-73-8 | -- | µg/m³ | 130 | 8.5 | 9 | 8.1 U | 8.1 U | -- | 8.1 U | 8.1 U | 15 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 67 | µg/m³ | 7.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | -- | 2.4 U | 2.4 U | 4.6 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 230 | µg/m³ | 420 | 23 | 24 | 8.1 U | 8.1 U | -- | 8.1 U | 8.1 U | 15 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 1.4 | µg/m³ | 0.77 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | -- | 0.25 U | 0.25 U | 0.48 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2-Dichlorobenzene | 95-50-1 | 6,700 | µg/m³ | 6 U | 2 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U | 3.8 U | 2 U | 2 U | 2 U | 2 U |
| 1,2-Dichloroethane (EDC) | 107-06-2 | 32 | µg/m³ | 5.8 | 3.2 | 2.9 | 0.59 | 0.39 | -- | 0.52 | 0.13 U | 0.25 U | 0.13 U | 0.13 U | 0.16 | 0.13 U |
| 1,2-Dichloropropane | 78-87-5 | 83 | µg/m³ | 3.3 | 2.5 | 2.5 | 1.1 | 0.79 | -- | 1.3 | 0.76 U | 1.4 U | 0.76 U | 0.76 U | 1.5 | 1.2 |
| 1,3,5-Trimethylbenzene | 108-67-8 | -- | µg/m³ | 130 | 8.1 U | 8.1 U | 8.1 U | 8.1 U | -- | 8.1 U | 8.1 U | 15 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U |
| 1,3-Butadiene | 106-99-0 | 28 | µg/m³ | 4.7 | 0.073 U | 0.073 U | 11 | 6.3 | -- | 0.073 U | 1.6 | 0.14 U | 0.073 U | 0.073 U | 2.4 | 0.073 U |
| 1,3-Dichlorobenzene | 541-73-1 | -- | µg/m³ | 6 U | 2 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U | 3.8 U | 2 U | 2 U | 2 U | 2 U |
| 1,4-Dichlorobenzene | 106-46-7 | 76 | µg/m³ | 2.4 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | -- | 0.79 U | 0.79 U | 1.5 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U |
| 1,4-Dioxane | 123-91-1 | -- | µg/m³ | 3.6 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | -- | 1.2 U | 1.2 U | 2.3 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U |
| 1-Butanol | 71-36-3 | -- | µg/m³ | 61 U | 20 U | 20 U | 53 | 20 U | -- | 20 U | 20 U | 38 U | 54 | 20 U | 20 U | 20 U |
| 2-Butanone (MEK) | 78-93-3 | 170,000 | µg/m³ | 94 | 9.7 U | 9.7 U | 9.7 U | 9.7 U | -- | 9.7 U | 9.7 U | 18 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U |
| 2-Hexanone | 591-78-6 | -- | µg/m³ | 41 U | 14 U | 14 U | 14 U | 14 U | -- | 14 U | 14 U | 26 U | 14 U | 14 U | 14 U | 14 U |
| 2-Pentanone | 107-87-9 | -- | µg/m³ | 35 U | 12 U | 12 U | 12 U | 12 U | -- | 12 U | 12 U | 22 U | 12 U | 12 U | 12 U | 12 U |
| 2-Propanol | 67-63-0 | -- | µg/m³ | 86 U | 28 U | 28 U | 300 | 28 U | -- | 28 U | 28 U | 54 U | 28 U | 28 U | 130 | 28 U |
| 3-Hexanone | 589-38-8 | -- | µg/m³ | 41 U | 14 U | 14 U | 14 U | 14 U | -- | 14 U | 14 U | 26 U | 14 U | 14 U | 14 U | 14 U |
| 3-Pentanone | 96-22-0 | -- | µg/m³ | 35 U | 12 U | 12 U | 12 U | 12 U | -- | 12 U | 12 U | 22 U | 12 U | 12 U | 12 U | 12 U |
| 4-Methyl-2-pentanone | 108-10-1 | 100,000 | µg/m³ | 41 U | 14 U | 14 U | 26 | 14 U | -- | 14 U | 14 U | 26 U | 14 U | 14 U | 14 U | 14 U |
| Acetaldehyde | 75-07-0 | 300 | µg/m³ | 90 U | 110 | 30 U | 80 | 66 | -- | 270 U | 49 | 56 U | 34 | 30 U | 45 | 30 U |
| Acetone | 67-64-1 | -- | µg/m³ | 1,300 J | 500 J | 490 J | 91 | 160 | -- | 16 U | 28 | 30 U | 130 | 43 | 100 | 35 |
| Acetonitrile | 75-05-8 | 2,000 | µg/m³ | 27 | 5.5 U | 5.5 U | 6.9 | 5.5 U | -- | 5.5 U | 5.5 U | 10 U | 5.5 U | 5.5 U | 5.5 U | 5.5 U |
| Acrolein | 107-02-8 | 0.67 | µg/m³ | ***9.2 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | -- | ***3 U*** | ***3 U*** | ***5.7 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** |
| Acrylonitrile | 107-13-1 | 12 | µg/m³ | 2.2 U | 0.72 U | 0.72 U | 5.8 | 4 | -- | 0.72 U | 0.72 U | 1.4 U | 0.72 U | 0.72 U | 0.72 U | 0.72 U |
| Benzyl chloride | 100-44-7 | 17 | µg/m³ | 2.3 | 0.17 U | 0.55 | 0.17 U | 0.17 U | -- | 0.17 U | 0.17 U | 0.32 U | 0.17 U | 0.17 U | 0.17 U | 0.17 U |
| Bromodichloromethane | 75-27-4 | 23 | µg/m³ | 5.8 | 0.22 U | 0.22 U | 0.22 U | 0.22 U | -- | 0.22 U | 0.22 U | 0.42 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U |
| Bromoform | 75-25-2 | 760 | µg/m³ | 21 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | -- | 6.8 U | 6.8 U | 13 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U |
| Bromomethane | 74-83-9 | 170 | µg/m³ | 16 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | -- | 5.1 U | 5.1 U | 9.7 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U |
| Butanal | 123-72-8 | -- | µg/m³ | 29 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | -- | 9.7 U | 9.7 U | 18 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U |
| Carbon disulfide | 75-15-0 | 23,000 | µg/m³ | 62 U | 21 U | 21 U | 21 U | 21 U | -- | 21 U | 21 U | 39 U | 21 U | 21 U | 21 U | 21 U |
| Carbon tetrachloride | 56-23-5 | 140 | µg/m³ | 6.3 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | -- | 2.1 U | 2.1 U | 3.9 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U |
| CFC-113 | 76-13-1 | 1,000,000 | µg/m³ | 7.7 U | 2.5 U | 2.5 U | 3.3 JB | 2.5 U | -- | 2.5 U | 2.5 U | 4.8 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| Chlorobenzene | 108-90-7 | 1,700 | µg/m³ | 4.6 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | -- | 1.5 U | 1.5 U | 2.9 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U |
| Chlorodifluoromethane | 75-45-6 | 1,700,000 | µg/m³ | 8.3 | 1.2 U | 1.2 U | 3.7 | 4.1 | -- | 1.2 U | 2.3 | 2.2 U | 1.5 | 1.2 U | 2.5 | 1.2 U |
| Chloroethane | 75-00-3 | 330,000 | µg/m³ | 4.9 | 3.5 | 3.6 | 1.5 | 1.1 | -- | 2.4 | 0.87 U | 1.6 U | 0.87 U | 0.87 U | 0.87 U | 0.87 U |
| Chloroform | 67-66-3 | 36 | µg/m³ | 6.9 | 3.5 | 3.9 | 2.9 | 1.9 | -- | 2.6 | 0.69 | 0.46 | 2.5 | 1.5 | 0.97 | 0.47 |
| Chloromethane | 74-87-3 | 3,000 | µg/m³ | 7.3 | 3 | 2.6 | 4.4 | 3.3 | -- | 2.6 | 0.68 U | 1.3 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U |

# Table 1
## Soil Gas Data

| | | | | Building A East Office Node | | | | | | | Building A Center | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-01 | | | VP-02 | | | | VP-03 | | VP-04 | | VP-05 | |
| | | | Sample ID | VP-01-091218 | VP-01-102418 | VP-01-102418 Dup | VP-02-091218 | VP-02-091218 Dup | VP-02B-091218 | VP-02-102418 | VP-03-091218 | VP-03-102418 | VP-04-091218 | VP-04-102418 | VP-05-091218 | VP-05-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 10/24/2018 | 09/12/2018 | 09/12/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | -- | µg/m³ | 4 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | -- | 1.3 U | 1.3 U | 2.5 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U |
| cis-1,3-Dichloropropene | 10061-01-5 | -- | µg/m³ | 4.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | -- | 1.5 U | 1.5 U | 2.8 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U |
| Cyclohexane | 110-82-7 | -- | µg/m³ | 69 U | 23 U | 23 U | 23 U | 23 U | -- | 23 U | 23 U | 43 U | 23 U | 23 U | 23 U | 23 U |
| Cyclopentane | 287-92-3 | -- | µg/m³ | 2.9 U | 22 | 23 | 0.95 U | 20 | -- | 32 | 0.95 U | 1.8 U | 0.95 U | 0.95 U | 1.2 | 0.95 U |
| Dibromochloromethane | 124-48-1 | 31 | µg/m³ | 0.85 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | -- | 0.28 U | 0.28 U | 0.53 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U |
| Dichlorodifluoromethane | 75-71-8 | 3,300 | µg/m³ | 120 | 75 | 72 | 49 | 37 | -- | 47 | 35 | 23 | 17 | 10 | 39 | 29 |
| Ethanol | 64-17-5 | -- | µg/m³ | 75 U | 25 U | 25 U | 68 | 52 | -- | 25 U | 25 U | 47 U | 46 | 26 | 33 | 51 |
| F-114 | 76-14-2 | -- | µg/m³ | 7 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | -- | 2.3 U | 2.3 U | 4.4 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U |
| Hexachlorobutadiene | 87-68-3 | 38 | µg/m³ | 2.1 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | -- | 0.7 U | 0.7 U | 1.3 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U |
| Hexanal | 66-25-1 | -- | µg/m³ | 41 U | 14 U | 14 U | 14 U | 14 U | -- | 14 U | 14 U | 26 U | 14 U | 14 U | 14 U | 14 U |
| Hexane | 110-54-3 | 23,000 | µg/m³ | 140 | 52 | 53 | 69 | 71 | -- | 52 | 16 | 22 U | 13 | 12 U | 23 | 12 U |
| Iodomethane | 74-88-4 | -- | µg/m³ | 5.8 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | -- | 1.9 U | 1.9 U | 3.6 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U |
| Isobutene | 115-11-7 | -- | µg/m³ | 1,600 J | 840 J | 830 J | 180 | 130 | -- | 140 | 36 | 17 | 3 U | 3 U | 56 | 32 |
| Isoprene | 78-79-5 | -- | µg/m³ | 17 | 8 | 8.8 | 7 | 4.6 | -- | 4.8 | 0.92 U | 1.7 U | 0.92 U | 0.92 U | 0.92 U | 0.92 U |
| Methacrolein | 78-85-3 | -- | µg/m³ | 29 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | -- | 9.5 U | 9.5 U | 18 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U |
| Methyl t-butyl ether (MTBE) | 1634-04-4 | 3,200 | µg/m³ | 18 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | -- | 5.9 U | 5.9 U | 11 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U |
| Methyl vinyl ketone | 78-94-4 | -- | µg/m³ | 29 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | -- | 9.5 U | 9.5 U | 18 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U |
| Methylene chloride | 75-09-2 | 20,000 | µg/m³ | 870 U | 290 U | 290 U | 290 U | 410 | -- | 290 U | 290 U | 540 U | 290 U | 290 U | 290 U | 290 U |
| Pentanal | 110-62-3 | -- | µg/m³ | 35 U | 12 U | 12 U | 12 U | 12 U | -- | 12 U | 12 U | 22 U | 12 U | 12 U | 12 U | 12 U |
| Pentane | 109-66-0 | -- | µg/m³ | 360 | 150 | 150 | 150 | 110 | -- | 120 | 9.7 U | 18 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U |
| Propene | 115-07-1 | -- | µg/m³ | 1,300 J | 2.3 U | 2.3 U | 410 J | 2.3 U | -- | 2.3 U | 2.3 U | 4.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U |
| Styrene | 100-42-5 | 33,000 | µg/m³ | 8.5 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | -- | 2.8 U | 2.8 U | 5.3 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U |
| Tetrachloroethene | 127-18-4 | 1,300 | µg/m³ | 17 | 11 | 11 | 2.6 | 2.2 U | -- | 2.2 U | 8.5 | 5.7 | 5.3 | 2.2 | 2.2 U | 2.2 U |
| trans-1,2-Dichloroethene | 156-60-5 | -- | µg/m³ | 4 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | -- | 1.3 U | 1.3 U | 2.5 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U |
| trans-1,3-Dichloropropene | 10061-02-6 | -- | µg/m³ | 4.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | -- | 1.5 U | 1.5 U | 2.8 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U |
| Trichloroethene | 79-01-6 | 67 | µg/m³ | 9.1 | 6.6 | 8.4 | 5.4 | 2.4 JB | -- | 0.9 | 0.89 U | 3 | 6.8 | 0.96 | 5.8 | 0.89 |
| Trichlorofluoromethane | 75-69-4 | 23,000 | µg/m³ | 880 | 410 | 390 | 560 | 390 | -- | 180 | 210 | 110 | 150 | 69 | 390 | 250 |
| Vinyl acetate | 108-05-4 | 6,700 | µg/m³ | 70 U | 23 U | 23 U | 23 U | 23 U | -- | 23 U | 23 U | 44 U | 23 U | 23 U | 23 U | 23 U |
| Vinyl chloride | 75-01-4 | 93 | µg/m³ | 2.6 U | 0.84 U | 0.84 U | 0.84 U | 0.84 U | -- | 0.84 U | 0.84 U | 1.6 U | 0.84 U | 0.84 U | 0.84 U | 0.84 U |

Notes:

-- Not applicable.

**BOLD** Detected concentration exceeds criteria.

***Bold Italics*** Reporting limit exceeds criteria.

Abbreviations:

APH Air-phase hydrocarbons

CAS Chemical Abstracts Service

µg/m³ Micrograms per cubic meter

MTCA Model Toxics Control Act

NA Not available

TPH Total petroleum hydrocarbons

Qualifiers:

J Analyte was detected, concentration is considered to be an estimate.

JB Analyte was detected, concentration is considered to be an estimate due to potential blank contamination.

U Analyte was not detected at the given reporting limit.

UJ Analyte was not detected at the given reporting limit, which is considered to be an estimate.

# Table 1
## Soil Gas Data

| | | | | Building A West Office Node | | | | | | Building B East Office Node | | | | Building B Main - Center | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-06 | | VP-07 | | VP-08 | | VP-09 | | VP-10 | | VP-11 | |
| | | | Sample ID | VP-06-091218 | VP-06-102418 | VP-07-091218 | VP-07-102418 | VP-08-091218 | VP-08-102418 | VP-09-091218 | VP-09-102418 | VP-10-091218 | VP-10-102418 | VP-11-091218 | VP-11-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | | | | | | |
| APH EC5-8 aliphatics | NA | 200,000 | µg/m³ | 2,900 | 4,700 J | 3,900 J | 2,800 J | 5,900 J | 3,000 | 1,400 | 690 J | 1,200 | 470 J | 3,900 | 1,200 |
| APH EC9-10 aromatics | NA | -- | µg/m³ | 82 U | 82 UJ | 82 U | 82 UJ | 82 U | 120 U | 82 U | 82 UJ | 82 U | 82 UJ | 100 U | 82 U |
| APH EC9-12 aliphatics | NA | 10,000 | µg/m³ | 530 | 580 J | 170 | 340 J | 1,100 | 330 | 220 | 200 J | 360 | 320 J | 6,000 | 790 |
| Benzene | 71-43-2 | 110 | µg/m³ | 20 | 21 | 1.3 | 1.1 | 26 | 8.8 | 1.1 U | 1.1 U | 1.1 U | 1.1 U | 11 | 3.5 |
| Ethylbenzene | 100-41-4 | 33,000 | µg/m³ | 7.7 | 5.8 | 1.4 U | 1.4 U | 15 | 3.9 | 2.6 | 1.4 U | 1.4 U | 1.4 U | 3.3 | 1.8 |
| m,p-Xylene | 179601-23-1 | -- | µg/m³ | 14 | 9.1 | 4.8 | 2.9 U | 13 | 4.8 | 10 | 2.9 U | 2.9 U | 2.9 U | 10 | 6.1 |
| Naphthalene | 91-20-3 | 25 | µg/m³ | 0.88 JB | 0.54 JB | 0.74 JB | 0.47 JB | 1.5 JB | 0.42 JB | 1.6 JB | 0.4 JB | 1.1 JB | 0.45 JB | 1.7 JB | 0.5 JB |
| o-Xylene | 95-47-6 | 3,300 | µg/m³ | 4.9 | 2.9 | 1.6 | 1.4 U | 8.3 | 2.2 | 3 | 1.4 U | 1.4 U | 1.4 U | 8.7 | 2.6 |
| Toluene | 108-88-3 | 170,000 | µg/m³ | 17 | 21 | 3.7 | 3.7 | 24 | 12 | 5.4 | 2.3 | 1.6 JB | 3.5 | 25 | 13 |
| 1,1,1-Trichloroethane | 71-55-6 | 170,000 | µg/m³ | 11 | 23 | 23 | 19 | 20 | 13 | 1.8 U | 1.8 U | 1.8 U | 1.8 U | 9.1 | 1.8 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 14 | µg/m³ | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.58 U | 0.45 U |
| 1,1,2-Trichloroethane | 79-00-5 | 6.7 | µg/m³ | 0.27 JB | 0.18 U | 0.18 U | 0.18 U | 0.83 | 0.18 U | 0.18 U | 0.18 U | 0.18 U | 0.18 U | 3.8 | 0.18 U |
| 1,1-Dichloroethane | 75-34-3 | 520 | µg/m³ | 1.4 | 3.8 | 4.9 | 4 | 9.2 | 7.2 | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 7.5 | 2.7 |
| 1,1-Dichloroethene | 75-35-4 | 6,700 | µg/m³ | 1.6 | 7.9 | 2.1 | 1.3 U | 3 | 2.3 | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 6.8 | 1.5 |
| 1,2,3-Trimethylbenzene | 526-73-8 | -- | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 10 U | 8.1 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 67 | µg/m³ | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 3.1 U | 2.4 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 230 | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 10 U | 8.1 U |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 1.4 | µg/m³ | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.32 U | 0.25 U |
| 1,2-Dichlorobenzene | 95-50-1 | 6,700 | µg/m³ | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2.5 U | 2 U |
| 1,2-Dichloroethane (EDC) | 107-06-2 | 32 | µg/m³ | 1.1 | 1.2 | 1.2 | 0.8 | 2.2 | 0.89 | 0.13 U | 0.13 U | 0.13 U | 0.13 U | 0.27 | 0.13 U |
| 1,2-Dichloropropane | 78-87-5 | 83 | µg/m³ | 0.96 | 1.6 | 5 | 4.5 | 2.9 | 1.8 | 0.76 U | 0.76 U | 0.76 U | 0.76 U | 0.97 U | 0.76 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | -- | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 10 U | 8.1 U |
| 1,3-Butadiene | 106-99-0 | 28 | µg/m³ | 29 | 0.073 U | 25 | 0.073 U | 47 | 0.073 U | 0.073 U | 0.073 U | 0.088 JB | 0.073 U | 3.9 | 0.073 U |
| 1,3-Dichlorobenzene | 541-73-1 | -- | µg/m³ | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2.5 U | 2 U |
| 1,4-Dichlorobenzene | 106-46-7 | 76 | µg/m³ | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 1 U | 0.79 U |
| 1,4-Dioxane | 123-91-1 | -- | µg/m³ | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.5 U | 1.2 U |
| 1-Butanol | 71-36-3 | -- | µg/m³ | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 59 | 20 U | 25 U | 20 U |
| 2-Butanone (MEK) | 78-93-3 | 170,000 | µg/m³ | 11 | 9.7 U | 9.7 U | 9.7 U | 21 | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 12 U | 9.7 U |
| 2-Hexanone | 591-78-6 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 17 U | 14 U |
| 2-Pentanone | 107-87-9 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 15 U | 12 U |
| 2-Propanol | 67-63-0 | -- | µg/m³ | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 36 U | 28 U |
| 3-Hexanone | 589-38-8 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 17 U | 14 U |
| 3-Pentanone | 96-22-0 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 15 U | 12 U |
| 4-Methyl-2-pentanone | 108-10-1 | 100,000 | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 17 U | 14 U |
| Acetaldehyde | 75-07-0 | 300 | µg/m³ | 30 U | 270 U | 100 | 30 U | 30 U | 270 U | 30 U | 30 U | 160 | 30 U | 320 | 30 U |
| Acetone | 67-64-1 | -- | µg/m³ | 210 | 120 | 170 | 26 | 1,300 J | 550 J | 48 | 17 | 30 | 19 | 20 U | 25 |
| Acetonitrile | 75-05-8 | 2,000 | µg/m³ | 15 | 5.5 U | 15 | 5.5 U | 39 | 5.5 U | 5.5 U | 5.5 U | 5.5 U | 5.5 U | 7.1 U | 5.5 U |
| Acrolein | 107-02-8 | 0.67 | µg/m³ | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3.9 U*** | ***3 U*** |
| Acrylonitrile | 107-13-1 | 12 | µg/m³ | 11 | 0.72 U | 9.2 | 0.72 U | 25 | 0.72 U | 0.72 U | 0.72 U | 0.72 U | 0.72 U | 0.91 U | 0.72 U |
| Benzyl chloride | 100-44-7 | 17 | µg/m³ | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.29 JB | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.63 | 0.17 U |
| Bromodichloromethane | 75-27-4 | 23 | µg/m³ | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 3.2 | 0.22 U |
| Bromoform | 75-25-2 | 760 | µg/m³ | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 8.7 U | 6.8 U |
| Bromomethane | 74-83-9 | 170 | µg/m³ | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 6.5 U | 5.1 U |
| Butanal | 123-72-8 | -- | µg/m³ | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 12 U | 9.7 U |
| Carbon disulfide | 75-15-0 | 23,000 | µg/m³ | 21 U | 21 U | 21 U | 21 U | 27 | 21 U | 21 U | 21 U | 21 U | 21 U | 26 U | 21 U |
| Carbon tetrachloride | 56-23-5 | 140 | µg/m³ | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.1 U | 2.6 U | 2.1 U |
| CFC-113 | 76-13-1 | 1,000,000 | µg/m³ | 2.5 U | 8.2 | 4.6 JB | 2.5 U | 9.4 | 6.9 | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 12 | 2.9 |
| Chlorobenzene | 108-90-7 | 1,700 | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.9 U | 1.5 U |
| Chlorodifluoromethane | 75-45-6 | 1,700,000 | µg/m³ | 1.8 | 1.2 U | 3 | 1.2 U | 11 | 1.2 U | 2.3 | 1.2 U | 5 | 1.2 U | 4 | 1.2 U |
| Chloroethane | 75-00-3 | 330,000 | µg/m³ | 1.1 | 0.88 | 0.93 | 0.87 U | 3.9 | 2.4 | 0.87 U | 0.87 U | 0.87 U | 0.87 U | 1.1 U | 0.87 U |
| Chloroform | 67-66-3 | 36 | µg/m³ | 2.1 | 3.1 | 2.6 | 1.9 | 4.7 | 2.1 | 3 | 2 | 3.7 | 1.6 | 0.45 | 0.16 U |
| Chloromethane | 74-87-3 | 3,000 | µg/m³ | 3.2 | 0.68 U | 0.68 U | 0.68 U | 4 | 0.68 U | 0.68 U | 0.68 U | 0.88 | 0.68 U | 0.87 U | 0.68 U |

# Table 1
## Soil Gas Data

| | | | | Building A West Office Node | | | | | | Building B East Office Node | | | | Building B Main - Center | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-06 | | VP-07 | | VP-08 | | VP-09 | | VP-10 | | VP-11 | |
| | | | Sample ID | VP-06-091218 | VP-06-102418 | VP-07-091218 | VP-07-102418 | VP-08-091218 | VP-08-102418 | VP-09-091218 | VP-09-102418 | VP-10-091218 | VP-10-102418 | VP-11-091218 | VP-11-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | -- | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 4.5 | 1.3 U |
| cis-1,3-Dichloropropene | 10061-01-5 | -- | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.9 U | 1.5 U |
| Cyclohexane | 110-82-7 | -- | µg/m³ | 23 U | 25 | 23 U | 23 U | 36 | 27 | 23 U | 23 U | 23 U | 23 U | 31 JB | 23 U |
| Cyclopentane | 287-92-3 | -- | µg/m³ | 20 | 39 | 19 | 15 | 72 | 74 | 0.95 U | 0.95 U | 0.95 U | 0.95 U | 1.2 U | 0.95 U |
| Dibromochloromethane | 124-48-1 | 31 | µg/m³ | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.36 U | 0.28 U |
| Dichlorodifluoromethane | 75-71-8 | 3,300 | µg/m³ | 74 | 140 | 91 | 77 | 57 | 29 | 3.8 | 2.9 | 7.8 | 6.6 | 6 | 3.6 |
| Ethanol | 64-17-5 | -- | µg/m³ | 25 U | 31 | 38 | 40 | 32 | 25 U | 28 | 25 U | 41 | 25 U | 55 | 25 U |
| F-114 | 76-14-2 | -- | µg/m³ | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.9 U | 2.3 U |
| Hexachlorobutadiene | 87-68-3 | 38 | µg/m³ | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 0.9 JB | 0.7 U |
| Hexanal | 66-25-1 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 17 U | 14 U |
| Hexane | 110-54-3 | 23,000 | µg/m³ | 100 | 110 | 33 | 12 U | 79 | 40 | 13 | 12 U | 14 | 12 U | 33 | 12 U |
| Iodomethane | 74-88-4 | -- | µg/m³ | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 2.4 U | 1.9 U |
| Isobutene | 115-11-7 | -- | µg/m³ | 700 J | 960 J | 610 J | 430 J | 1,200 J | 760 J | 3 U | 3 U | 3 U | 3 U | 95 | 12 |
| Isoprene | 78-79-5 | -- | µg/m³ | 7.3 | 12 | 1 | 0.92 U | 16 | 18 | 0.92 U | 0.92 U | 0.92 U | 0.92 U | 1.2 | 0.92 U |
| Methacrolein | 78-85-3 | -- | µg/m³ | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 12 U | 9.5 U |
| Methyl t-butyl ether (MTBE) | 1634-04-4 | 3,200 | µg/m³ | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 7.6 U | 5.9 U |
| Methyl vinyl ketone | 78-94-4 | -- | µg/m³ | 9.5 U | 11 | 9.5 U | 9.5 U | 22 | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 12 U | 9.5 U |
| Methylene chloride | 75-09-2 | 20,000 | µg/m³ | 290 U | 290 U | 470 | 290 U | 290 U | 290 U | 290 U | 290 U | 290 U | 290 U | 360 U | 290 U |
| Pentanal | 110-62-3 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 15 U | 12 U |
| Pentane | 109-66-0 | -- | µg/m³ | 240 | 380 | 55 | 43 | 470 | 290 | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 77 | 9.7 U |
| Propene | 115-07-1 | -- | µg/m³ | 470 J | 450 J | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.6 | 2.3 U | 2.4 JB | 2.9 U | 2.3 U |
| Styrene | 100-42-5 | 33,000 | µg/m³ | 3.4 | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 3.6 U | 2.8 U |
| Tetrachloroethene | 127-18-4 | 1,300 | µg/m³ | 2.2 U | 9.5 | 3.1 | 2.3 | 5.4 | 2.9 | 3.6 | 2.2 U | 2.2 U | 2.2 U | 14 | 3.8 |
| trans-1,2-Dichloroethene | 156-60-5 | -- | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 2 | 1.3 U |
| trans-1,3-Dichloropropene | 10061-02-6 | -- | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.9 U | 1.5 U |
| Trichloroethene | 79-01-6 | 67 | µg/m³ | 2.8 | 28 | 2.8 | 1.6 | 4.4 | 6.9 | 2.2 JB | 1.2 | 0.89 U | 1.8 | 28 | 11 |
| Trichlorofluoromethane | 75-69-4 | 23,000 | µg/m³ | 1,100 J | 2,000 J | 2,200 J | 1,700 J | 960 J | 410 | 6.1 | 3.6 | 120 | 55 | 5.9 | 2.7 |
| Vinyl acetate | 108-05-4 | 6,700 | µg/m³ | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 30 U | 23 U |
| Vinyl chloride | 75-01-4 | 93 | µg/m³ | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 0.92 | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 1.1 U | 0.84 U |

Notes:

-- Not applicable.

**BOLD** Detected concentration exceeds criteria.

***Bold Italics*** Reporting limit exceeds criteria.

Abbreviations:

APH Air-phase hydrocarbons

CAS Chemical Abstracts Service

µg/m³ Micrograms per cubic meter

MTCA Model Toxics Control Act

NA Not available

TPH Total petroleum hydrocarbons

Qualifiers:

J Analyte was detected, concentration is considered to be an estimate.

JB Analyte was detected, concentration is considered to be an estimate due to potential blank contamination.

U Analyte was not detected at the given reporting limit.

UJ Analyte was not detected at the given reporting limit, which is considered to be an estimate.

# Table 1
## Soil Gas Data

| | | | | Building B West Office Node | | | | | | Lab Blank |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-12 | | VP-13 | | VP-14 | | VP-LB |
| | | | Sample ID | VP-12-091218 | VP-12-102418 | VP-13-091218 | VP-13-102418 | VP-14-091218 | VP-14-102418 | VP-LB-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | |
| APH EC5-8 aliphatics | NA | 200,000 | µg/m³ | 820 | 740 J | 800 | 770 J | 2,600 | 710 J | 470 |
| APH EC9-10 aromatics | NA | -- | µg/m³ | 82 U | 82 UJ | 82 U | 82 UJ | 82 U | 82 UJ | 250 U |
| APH EC9-12 aliphatics | NA | 10,000 | µg/m³ | 180 | 250 J | 150 | 180 J | 520 | 390 J | 350 U |
| Benzene | 71-43-2 | 110 | µg/m³ | 1.1 U | 1.1 U | 1.1 U | 1.1 U | 3.6 | 1.1 U | 3.2 U |
| Ethylbenzene | 100-41-4 | 33,000 | µg/m³ | 1.4 U | 1.4 U | 1.4 U | 2.6 | 1.6 | 5.7 | 4.3 U |
| m,p-Xylene | 179601-23-1 | -- | µg/m³ | 2.9 | 2.9 U | 2.9 U | 6.8 | 4.4 | 27 | 8.7 U |
| Naphthalene | 91-20-3 | 25 | µg/m³ | 1.1 JB | 0.45 JB | 0.54 JB | 0.36 JB | 1.1 JB | 2.3 JB | 1 U |
| o-Xylene | 95-47-6 | 3,300 | µg/m³ | 1.4 U | 1.4 U | 1.4 U | 2.6 | 2.2 | 8.3 | 4.3 U |
| Toluene | 108-88-3 | 170,000 | µg/m³ | 2.3 | 2.7 | 1.4 JB | 42 | 9.3 | 34 | 4.4 |
| 1,1,1-Trichloroethane | 71-55-6 | 170,000 | µg/m³ | 2.1 JB | 1.8 U | 2.1 JB | 15 | 6.9 | 3.3 | 5.5 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 14 | µg/m³ | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 0.45 U | 1.4 U |
| 1,1,2-Trichloroethane | 79-00-5 | 6.7 | µg/m³ | 0.18 U | 0.18 U | 0.18 U | 0.18 U | 4.9 | 0.18 U | 0.55 U |
| 1,1-Dichloroethane | 75-34-3 | 520 | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 3.8 | 2.4 | 1.3 U | 4 U |
| 1,1-Dichloroethene | 75-35-4 | 6,700 | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 8.9 | 10 | 1.3 U | 4 U |
| 1,2,3-Trimethylbenzene | 526-73-8 | -- | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 25 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 67 | µg/m³ | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 2.4 U | 7.4 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 230 | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 25 U |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 1.4 | µg/m³ | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.77 U |
| 1,2-Dichlorobenzene | 95-50-1 | 6,700 | µg/m³ | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 6 U |
| 1,2-Dichloroethane (EDC) | 107-06-2 | 32 | µg/m³ | 0.13 U | 0.13 U | 0.13 U | 0.13 | 0.13 JB | 0.31 | 0.4 U |
| 1,2-Dichloropropane | 78-87-5 | 83 | µg/m³ | 0.76 U | 0.76 U | 0.76 U | 0.76 U | 0.76 U | 0.76 U | 2.3 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | -- | µg/m³ | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 8.1 U | 25 U |
| 1,3-Butadiene | 106-99-0 | 28 | µg/m³ | 0.088 | 0.073 U | 0.095 JB | 0.073 U | 16 | 0.073 U | 0.35 |
| 1,3-Dichlorobenzene | 541-73-1 | -- | µg/m³ | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 6 U |
| 1,4-Dichlorobenzene | 106-46-7 | 76 | µg/m³ | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 0.79 U | 2.4 U |
| 1,4-Dioxane | 123-91-1 | -- | µg/m³ | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 3.6 U |
| 1-Butanol | 71-36-3 | -- | µg/m³ | 20 U | 20 U | 100 | 20 U | 21 | 20 U | 61 U |
| 2-Butanone (MEK) | 78-93-3 | 170,000 | µg/m³ | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 13 | 29 U |
| 2-Hexanone | 591-78-6 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 41 U |
| 2-Pentanone | 107-87-9 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 35 U |
| 2-Propanol | 67-63-0 | -- | µg/m³ | 28 U | 28 U | 28 U | 28 U | 28 U | 28 U | 86 U |
| 3-Hexanone | 589-38-8 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 41 U |
| 3-Pentanone | 96-22-0 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 35 U |
| 4-Methyl-2-pentanone | 108-10-1 | 100,000 | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 38 | 41 U |
| Acetaldehyde | 75-07-0 | 300 | µg/m³ | 30 U | 30 U | 30 U | 30 U | 110 | 30 U | 90 U |
| Acetone | 67-64-1 | -- | µg/m³ | 25 | 18 | 44 | 23 | 99 | 58 | 64 |
| Acetonitrile | 75-05-8 | 2,000 | µg/m³ | 5.5 U | 5.5 U | 5.5 U | 5.5 U | 14 | 5.5 U | 17 U |
| Acrolein | 107-02-8 | 0.67 | µg/m³ | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***3 U*** | ***9.2 U*** |
| Acrylonitrile | 107-13-1 | 12 | µg/m³ | 0.72 U | 0.72 U | 0.72 U | 0.72 U | **16** | 0.72 U | 2.2 U |
| Benzyl chloride | 100-44-7 | 17 | µg/m³ | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.52 U |
| Bromodichloromethane | 75-27-4 | 23 | µg/m³ | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.67 U |
| Bromoform | 75-25-2 | 760 | µg/m³ | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 21 U |
| Bromomethane | 74-83-9 | 170 | µg/m³ | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 5.1 U | 16 U |
| Butanal | 123-72-8 | -- | µg/m³ | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 29 U |
| Carbon disulfide | 75-15-0 | 23,000 | µg/m³ | 21 U | 21 U | 21 U | 21 U | 21 U | 21 U | 62 U |
| Carbon tetrachloride | 56-23-5 | 140 | µg/m³ | 2.1 U | 2.1 U | 6.2 | 2.1 U | 62 | 2.1 U | 6.3 U |
| CFC-113 | 76-13-1 | 1,000,000 | µg/m³ | 2.5 U | 2.5 U | 3.3 | 15 | 18 | 4.1 | 7.7 U |
| Chlorobenzene | 108-90-7 | 1,700 | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 4.6 U |
| Chlorodifluoromethane | 75-45-6 | 1,700,000 | µg/m³ | 2.3 | 1.2 U | 7 | 1.2 U | 2.9 | 1.2 U | 18 |
| Chloroethane | 75-00-3 | 330,000 | µg/m³ | 0.87 U | 0.87 U | 0.87 U | 0.87 U | 0.87 U | 0.87 U | 2.6 U |
| Chloroform | 67-66-3 | 36 | µg/m³ | 3.7 | 1.3 | 5.2 | 2.3 | 4.3 | 1.3 | 0.49 U |
| Chloromethane | 74-87-3 | 3,000 | µg/m³ | 0.68 U | 0.68 U | 2 | 0.68 U | 0.68 U | 0.68 U | 2.1 U |

# Table 1
## Soil Gas Data

| | | | | Building B West Office Node | | | | | | Lab Blank |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | VP-12 | | VP-13 | | VP-14 | | VP-LB |
| | | | Sample ID | VP-12-091218 | VP-12-102418 | VP-13-091218 | VP-13-102418 | VP-14-091218 | VP-14-102418 | VP-LB-102418 |
| | | | Sample Date | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 09/12/2018 | 10/24/2018 | 10/24/2018 |
| Analyte | CAS No. | Sub-Slab MTCA Method C Soil Gas Screening Level | Units | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | -- | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 4 U |
| cis-1,3-Dichloropropene | 10061-01-5 | -- | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 4.5 U |
| Cyclohexane | 110-82-7 | -- | µg/m³ | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 69 U |
| Cyclopentane | 287-92-3 | -- | µg/m³ | 0.95 U | 0.95 U | 0.95 U | 0.95 U | 28 | 0.95 U | 2.9 U |
| Dibromochloromethane | 124-48-1 | 31 | µg/m³ | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.28 U | 0.85 U |
| Dichlorodifluoromethane | 75-71-8 | 3,300 | µg/m³ | 4.3 | 4 | 6.5 | 6.3 | 59 | 62 | 4.9 U |
| Ethanol | 64-17-5 | -- | µg/m³ | 43 | 25 U | 82 | 25 U | 71 | 49 | 86 |
| F-114 | 76-14-2 | -- | µg/m³ | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 2.3 U | 7 U |
| Hexachlorobutadiene | 87-68-3 | 38 | µg/m³ | 0.7 U | 0.7 U | 0.7 U | 0.7 U | 2.6 | 0.7 U | 2.1 U |
| Hexanal | 66-25-1 | -- | µg/m³ | 14 U | 14 U | 14 U | 14 U | 14 U | 14 U | 41 U |
| Hexane | 110-54-3 | 23,000 | µg/m³ | 12 U | 12 U | 38 | 12 U | 120 | 12 U | 57 |
| Iodomethane | 74-88-4 | -- | µg/m³ | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 1.9 U | 5.8 U |
| Isobutene | 115-11-7 | -- | µg/m³ | 3 U | 3 U | 3 U | 3 U | 410 J | 3 U | 9.2 U |
| Isoprene | 78-79-5 | -- | µg/m³ | 0.92 U | 0.92 U | 0.92 U | 0.92 U | 47 | 0.92 U | 13 |
| Methacrolein | 78-85-3 | -- | µg/m³ | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 29 U |
| Methyl t-butyl ether (MTBE) | 1634-04-4 | 3,200 | µg/m³ | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 5.9 U | 18 U |
| Methyl vinyl ketone | 78-94-4 | -- | µg/m³ | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 9.5 U | 29 U |
| Methylene chloride | 75-09-2 | 20,000 | µg/m³ | 290 U | 290 U | 2,200 J | 290 U | 300 | 290 U | 2,500 J |
| Pentanal | 110-62-3 | -- | µg/m³ | 12 U | 12 U | 12 U | 12 U | 12 U | 12 U | 35 U |
| Pentane | 109-66-0 | -- | µg/m³ | 9.7 U | 9.7 U | 9.7 U | 9.7 U | 260 | 9.7 U | 30 U |
| Propene | 115-07-1 | -- | µg/m³ | 2.7 | 2.3 U | 2.3 U | 3.2 JB | 2.3 U | 2.8 JB | 7.4 JB |
| Styrene | 100-42-5 | 33,000 | µg/m³ | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 8.5 U |
| Tetrachloroethene | 127-18-4 | 1,300 | µg/m³ | 3 | 2.2 U | 7.6 | 8 | 31 | 3.1 | 6.8 U |
| trans-1,2-Dichloroethene | 156-60-5 | -- | µg/m³ | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 1.3 U | 4 U |
| trans-1,3-Dichloropropene | 10061-02-6 | -- | µg/m³ | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 4.5 U |
| Trichloroethene | 79-01-6 | 67 | µg/m³ | 1.5 JB | 1.3 | 6.5 | 35 | **94** | 7.4 | 2.7 U |
| Trichlorofluoromethane | 75-69-4 | 23,000 | µg/m³ | 33 | 15 | 45 | 29 | 13 | 12 | 5.6 U |
| Vinyl acetate | 108-05-4 | 6,700 | µg/m³ | 23 U | 23 U | 23 U | 23 U | 23 U | 23 U | 70 U |
| Vinyl chloride | 75-01-4 | 93 | µg/m³ | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 0.84 U | 2.6 U |

Notes:

-- Not applicable.

**BOLD** Detected concentration exceeds criteria.

***Bold Italics*** Reporting limit exceeds criteria.

Abbreviations:

APH Air-phase hydrocarbons

CAS Chemical Abstracts Service

µg/m³ Micrograms per cubic meter

MTCA Model Toxics Control Act

NA Not available

TPH Total petroleum hydrocarbons

Qualifiers:

J Analyte was detected, concentration is considered to be an estimate.

JB Analyte was detected, concentration is considered to be an estimate due to potential blank contamination.

U Analyte was not detected at the given reporting limit.

UJ Analyte was not detected at the given reporting limit, which is considered to be an estimate.

**Table 2**
**JEM Results**

| Analyte | USEPA's Online JEM Worksheet—Predicted Concentrations to Indoor Air | | | | | | | | | | | Indoor Air MTCA Method C Cleanup Levels—Noncancer ($\mu g/m^3$) | Indoor Air MTCA Method C Cleanup Levels—Cancer ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sub-Slab Location | Soil Gas Concentration ($\mu g/m^3$) | Low Prediction ($\mu g/m^3$) | Cancer Risk [1] | Hazard Quotient [2] | Best Estimate ($\mu g/m^3$) | Cancer Risk [1] | Hazard Quotient [2] | High Prediction ($\mu g/m^3$) | Cancer Risk [1] | Hazard Quotient [2] | | |
| **Building A** | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | VP-1 | 420 | 4.21E-04 | NA | 7.08E-05 | 8.78E-04 | NA | 1.48E-04 | 1.63E-03 | NA | 2.74E-04 | 7 | NA |
| 1,3-Butadiene | VP-8 | 47 | 1.57E-04 | 1.81E-08 | NA | 3.70E-04 | 4.25E-08 | NA | 7.17E-04 | 8.25E-08 | NA | 2 | 0.83 |
| Acrolein | VP-1 | 9.2 | 1.44E-05 | NA | 7.22E-04 | 3.18E-05 | NA | 1.59E-03 | 6.04E-05 | NA | 3.02E-03 | 0.02 | NA |
| Acrylonitrile | VP-8 | 25 | 4.47E-05 | 1.25E-09 | 2.24E-05 | 9.93E-05 | 2.78E-09 | 4.97E-05 | 1.90E-04 | 5.30E-09 | 9.48E-05 | 2 | 0.368 |
| Naphthalene | VP-1 | 33 | 3.26E-05 | NA | 1.09E-05 | 6.74E-05 | NA | 2.25E-05 | 1.25E-04 | NA | 4.17E-05 | 3.00 | 0.74 |
| **Building B** | | | | | | | | | | | | | |
| Acetaldehyde | VP-11 | 320 | 7.41E-04 | 6.7E-10 | 8.23E-05 | 1.44E-03 | 1.3E-09 | 1.60E-04 | 2.61E-03 | 2.36E-09 | 2.90E-04 | 9 | 11.4 |
| Acrolein | VP-11 | 3.9 | 8.11E-06 | NA | 4.05E-04 | 1.53E-05 | NA | 7.63E-04 | 2.73E-05 | NA | 1.37E-03 | 0.02 | NA |
| Acrylonitrile | VP-14 | 16 | 3.66E-05 | 1.02E-09 | 1.83E-05 | 7.09E-05 | 1.98E-09 | 3.54E-05 | 1.29E-04 | 3.59E-09 | 6.43E-05 | 2 | 0.368 |
| Trichloroethene | VP-14 | 94 | 1.66E-04 | 7.5E-09 | 4.15E-06 | 2.94E-04 | 1.33E-08 | 7.34E-06 | 5.12E-04 | 2.31E-08 | 1.28E-05 | 2 | 6.3 |

Notes:

1 Target cancer risk is 1.0E-6.

2 Target hazard quotient is less than 1.0.

Abbreviations:

$\mu g/m^3$ Micrograms per cubic meters
MTCA Model Toxics Control Act
NA Not applicable
USEPA U.S. Environmental Protection Agency

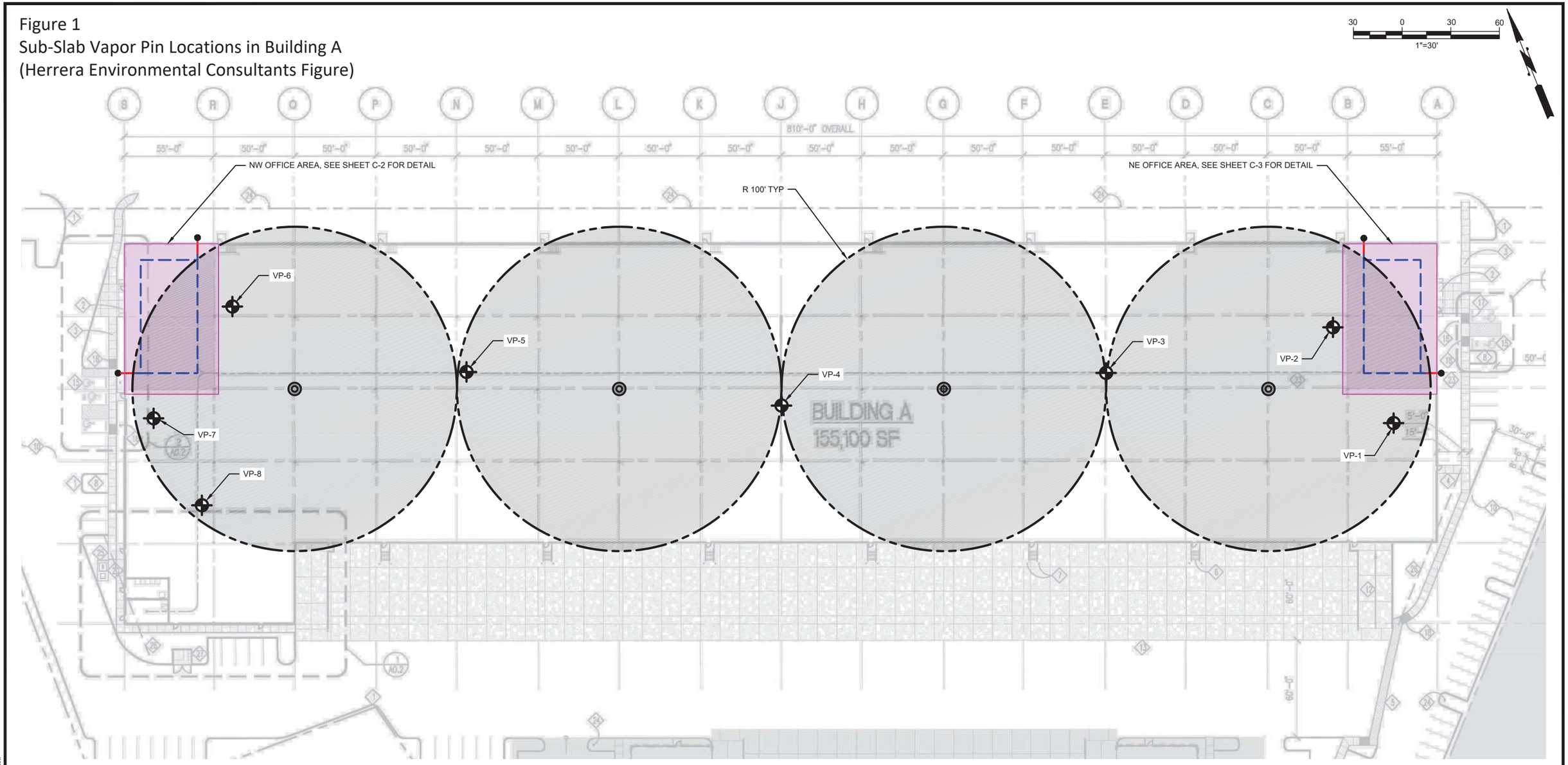
**Table 3**
**Reduced Analytes List**

| Analyte | CAS No. |
|---|---|
| APH EC5-8 aliphatics | NA |
| APH EC9-10 aromatics | NA |
| APH EC9-12 aliphatics | NA |
| 1,1,1-Trichloroethane | 71-55-6 |
| 1,1,2-Trichloroethane | 79-00-5 |
| 1,1-Dichloroethane | 75-34-3 |
| 1,1-Dichloroethene | 75-35-4 |
| 1,2,3-Trimethylbenzene | 526-73-8 |
| 1,2,4-Trimethylbenzene | 95-63-6 |
| 1,2-Dichloroethane (EDC) | 107-06-2 |
| 1,2-Dichloropropane | 78-87-5 |
| 1,3,5-Trimethylbenzene | 108-67-8 |
| 1,3-Butadiene | 106-99-0 |
| 1-Butanol | 71-36-3 |
| 2-Butanone (MEK) | 78-93-3 |
| 2-Propanol | 67-63-0 |
| 4-Methyl-2-pentanone | 108-10-1 |
| Acetaldehyde | 75-07-0 |
| Acetonitrile | 75-05-8 |
| Acrolein | 107-02-8 |
| Acrylonitrile | 107-13-1 |
| Benzene | 71-43-2 |
| Benzyl chloride | 100-44-7 |
| Bromodichloromethane | 75-27-4 |
| Carbon disulfide | 75-15-0 |
| Carbon tetrachloride | 56-23-5 |
| CFC-113 | 76-13-1 |
| Chlorodifluoromethane | 75-45-6 |
| Chloroethane | 75-00-3 |
| Chloroform | 67-66-3 |
| Chloromethane | 74-87-3 |
| cis-1,2-Dichloroethene | 156-59-2 |
| Cyclohexane | 110-82-7 |
| Cyclopentane | 287-92-3 |
| Dichlorodifluoromethane | 75-71-8 |
| Ethylbenzene | 100-41-4 |
| Hexachlorobutadiene | 87-68-3 |
| Hexane | 110-54-3 |
| Isobutene | 115-11-7 |
| Isoprene | 78-79-5 |
| m,p-Xylene | 179601-23-1 |
| Methyl vinyl ketone | 78-94-4 |
| Naphthalene | 91-20-3 |
| o-Xylene | 95-47-6 |
| Pentane | 109-66-0 |
| Propene | 115-07-1 |
| Styrene | 100-42-5 |
| Tetrachloroethene | 127-18-4 |
| Toluene | 108-88-3 |
| trans-1,2-Dichloroethene | 156-60-5 |
| Trichloroethene | 79-01-6 |
| Trichlorofluoromethane | 75-69-4 |
| Vinyl chloride | 75-01-4 |

Abbreviations:
APH Air-phase hydrocarbons
CAS Chemical Abstracts Service
NA Not available

# Figures

Figure 1
Sub-Slab Vapor Pin Locations in Building A
(Herrera Environmental Consultants Figure)




NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-8.
3. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
4. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
5. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

LEGEND:

- 4" RISER VENT
- RISER VENT WITH BLOWER
- ECOLOGY RECOMMENDED MONITORING LOCATION
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 4" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

ORIGINATED BY: / DATE:
CHECKED BY: / DATE:
BACK-CHECKED BY: / DATE:
CORRECTED BY: / DATE:
VERIFIED BY: / DATE:

O:\proj\Y2016\16-06475-000\CAD\Dwg\Work Plan Memo\Figure 2.dwg | 11/26/2018 2:38 PM | Todd Prescott

**WORK PLAN MEMO**

| No. | REVISION | BY | APP'D | DATE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

811 Know what's below. Call before you dig.

HERRERA

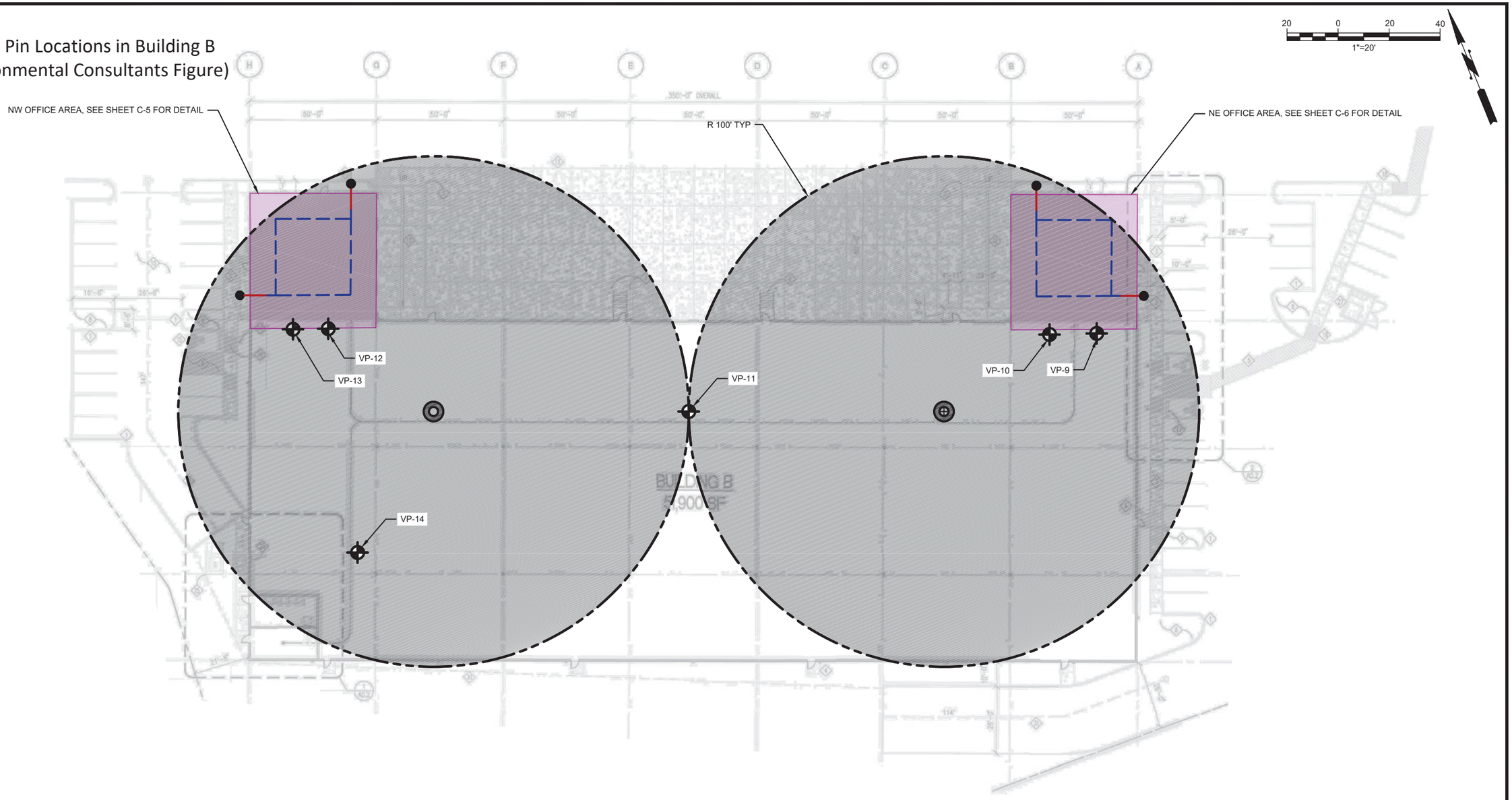
| | |
|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT |
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

PAD A

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: Figure 1
SHEET NO: 2 OF 4

Figure 2
Sub-Slab Vapor Pin Locations in Building B
(Herrera Environmental Consultants Figure)




NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER BUILDING SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-8.
3. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
4. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
5. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

LEGEND:

- 4" RISER VENT
- RISER VENT WITH BLOWER
- ECOLOGY RECOMMENDED MONITORING LOCATION
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 4" DIA SCH 80 OR GALVANIZED SOLID WALL PIPE
- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

ORIGINATED BY: / DATE:
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**WORK PLAN MEMO**

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ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

811 Know what's below. Call before you dig.

HERRERA

| | |
|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT |
| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

PAD B

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: Figure 2
SHEET NO: 3 OF 4

**Attachment 1**
**Ecology Correspondence**

## Gabe Cisneros

**From:** Teel, Steve (ECY) <STEE461@ECY.WA.GOV>
**Sent:** Thursday, September 6, 2018 1:28 PM
**To:** Tom Colligan
**Cc:** Gabe Cisneros; Kristin Anderson; Drew Zaborowski; Scott Hooton (shooton@portoftacoma.com); Kara Hitchko; Acklam, Nicholas (ECY)
**Subject:** RE: Addendum for VI assessment at Taylor Way site
**Attachments:** bld-B_ss_201809061133.pdf

Tom –
Attached is a figure that shows our recommendations for changes to the Building B locations. Basically, we want them to be about 15 feet in from the outside edge and about 15 feet apart from each other. Please let me know by COB today if you have any questions because I won't be in the office tomorrow.
Thanks,
Steve

Steve Teel, LHG
Cleanup Project Manager/Hydrogeologist
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
Phone (360) 407-6247
steve.teel@ecy.wa.gov

---

**From:** Tom Colligan <Tom.Colligan@floydsnider.com>
**Sent:** Wednesday, September 5, 2018 2:43 PM
**To:** Teel, Steve (ECY) <STEE461@ECY.WA.GOV>
**Cc:** Gabe Cisneros <Gabe.Cisneros@floydsnider.com>; Kristin Anderson <Kristin.Anderson@floydsnider.com>; Drew Zaborowski <dzaborowski@avenue55.net>; Scott Hooton (shooton@portoftacoma.com) <shooton@portoftacoma.com>; Kara Hitchko <Kara.Hitchko@floydsnider.com>
**Subject:** Addendum for VI assessment at Taylor Way site

Steve, attached is a detail sheet C-10 for the vapor pins- and updated location maps which you have seen already. If you have any suggestions as to moving some locations, let us know. As we discussed today, these will be installed Friday by Gabe and sampled next week, per the protocols in the work plan as amended by your email comments below.

---

**From:** Teel, Steve (ECY) [mailto:STEE461@ECY.WA.GOV]
**Sent:** Tuesday, August 21, 2018 4:12 PM
**To:** Tom Colligan <Tom.Colligan@floydsnider.com>
**Cc:** Scott Hooton (shooton@portoftacoma.com) <shooton@portoftacoma.com>; Drew Zaborowski <dzaborowski@avenue55.net>; Michael Spillane <mspillane@herrerainc.com>; Acklam, Nicholas (ECY)

<nack461@ECY.WA.GOV>
**Subject:** RE: Addendum for VI assessment at Taylor Way site

Tom,
Thank you for submitting the below-referenced plan for our review. Please revise the plan to incorporate the following comments:

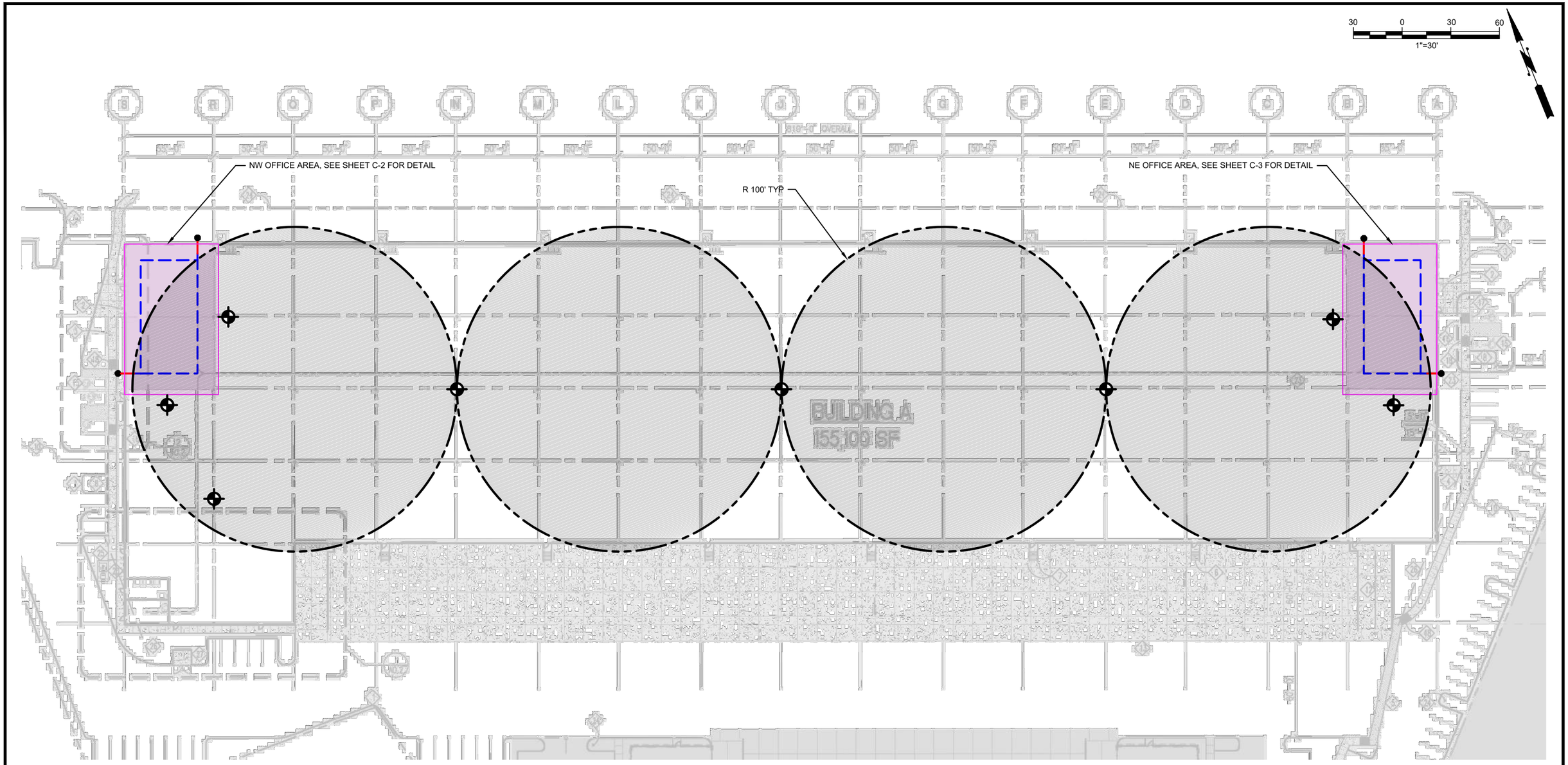
1. Four additional permanent sub-slab monitoring locations are needed. These additional locations shall be at the edge of the membrane at the south side of each of the office nodes in Buildings A and B. Because the office node monitoring points were not installed in the center of the office area prior to pouring the slab, the proposed network of only one near-membrane monitoring point per node is not sufficient. Therefore, two per node is needed. Provide an updated map to Ecology for review and approval.
2. Ecology does not agree that the proposed one indoor air sample from each warehouse space is sufficient. Due to the size of the warehouse space, at least four samples are needed from the Building A warehouse and at least two samples are needed from the Building B warehouse. A survey shall be made prior to conducting indoor air sampling to check for any areas of preferential vapor intrusion (such as cracks, utility penetrations, expansion joints, and floor drains). This information shall be used in planning Indoor air sample locations. A map with proposed indoor air sample locations shall be provided to Ecology for review and approval.
3. Field QC duplicate samples need to be included. Duplicate soil vapor samples shall be collected by using a T-splitter at the point of sample collection to divide the sample stream into two separate sample containers. Duplicate samples shall be collected on a daily frequency.
4. As stated in our previous comments, for the first year, at least two indoor air sampling rounds are required (winter and summer).
5. The building shall not be occupied until Ecology agrees that the vapor intrusion mitigation system is working adequately.
6. Ambient air background samples shall be collected in an upwind location from the Site. Therefore, the proposed location of the drive aisle between the buildings is not appropriate.
7. The use of Tedlar bags for sample collection is not recommended because of issues with adsorption of compounds. Remove all references to Tedlar bags from Attachment 1.
8. The constituent list for analyses shall include all compounds previously detected in soil gas, sub-slab, and indoor air samples and all potential constituents of concern for the Site.
9. Differential pressures shall be measured in the locations adjacent to the office nodes using a micro-manometer that is auto-zeroing and has a pressure differential sensitivity to 0.001 inches of water (such as a CLK-Zephyr II+ data logging micro-manometer). Differential pressures shall be recorded using a data logger for at least 48 hours (preferably one week) prior to sampling to assess fluctuations (if any) of cross-slab differential pressure.
10. A standard photoionization detector is generally not sensitive enough for vapor intrusion investigations because they are limited to ppmv range. As noted by the ITRC in their online guidance, (available at: https://www.itrcweb.org/PetroleumVI-Guidance/, for lower detection limits, either mobile laboratories or portable GC/MS or small-footprint gas chromatographs are available.

Steve Teel, LHG
Cleanup Project Manager/Hydrogeologist
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
Phone (360) 407-6247
steve.teel@ecy.wa.gov

**From:** Tom Colligan <Tom.Colligan@floydsnider.com>
**Sent:** Monday, August 13, 2018 11:02 AM
**To:** Teel, Steve (ECY) <STEE461@ECY.WA.GOV>
**Cc:** Scott Hooton (shooton@portoftacoma.com) <shooton@portoftacoma.com>; Drew Zaborowski <dzaborowski@avenue55.net>; Michael Spillane <mspillane@herrerainc.com>
**Subject:** Addendum for VI assessment at Taylor Way site

Steve, attached is the addendum detailing the approach for further assessment of the VI pathway at Buildings A and B at the Portside Development of the Taylor Way site. Let me know your thoughts as we would like to get in the field as soon as possible.

Tom Colligan L.H.G.
**FLOYD | SNIDER**
601 Union Street, Suite 600 | Seattle, WA 98101
direct tel 206.805.2166
Office tel: 206.292.2078 | fax: 206.682.7867
Tom.Colligan@floydsnider.com | www.floydsnider.com




## NOTES:

1. 30mil GEOMEMBRANE SHALL BE A CONTINUOUS SHEET UNDER OFFICE AREA SLAB AND SHALL EXTEND TO EXTERIOR EDGE OF PERIMETER FOOTING OR BE SEALED TO FOOTINGS BY BATTEN STRIP.
2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-8.
3. ALL INTERIOR VENT PIPING MUST BE PRESSURE TESTED USING HYDRO STATIC OR PNEUMATIC METHOD.
4. GRANULAR MATERIAL UNDER SLAB IN PIPE TRENCH SIZED LARGER THAN PERFORATIONS IN PIPE OR ADD GEOTEXTILE WRAP AROUND PERFORATED PIPE.
5. ALL SLAB PENETRATIONS SHALL BE SEALED WITH ELASTOMERIC POLYURETHANE SEALANT.

## LEGEND:

- 4" RISER VENT
- MONITORING LOCATION
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 2" DIA SCH 80 PVC OR GALVANIZED PIPE
- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

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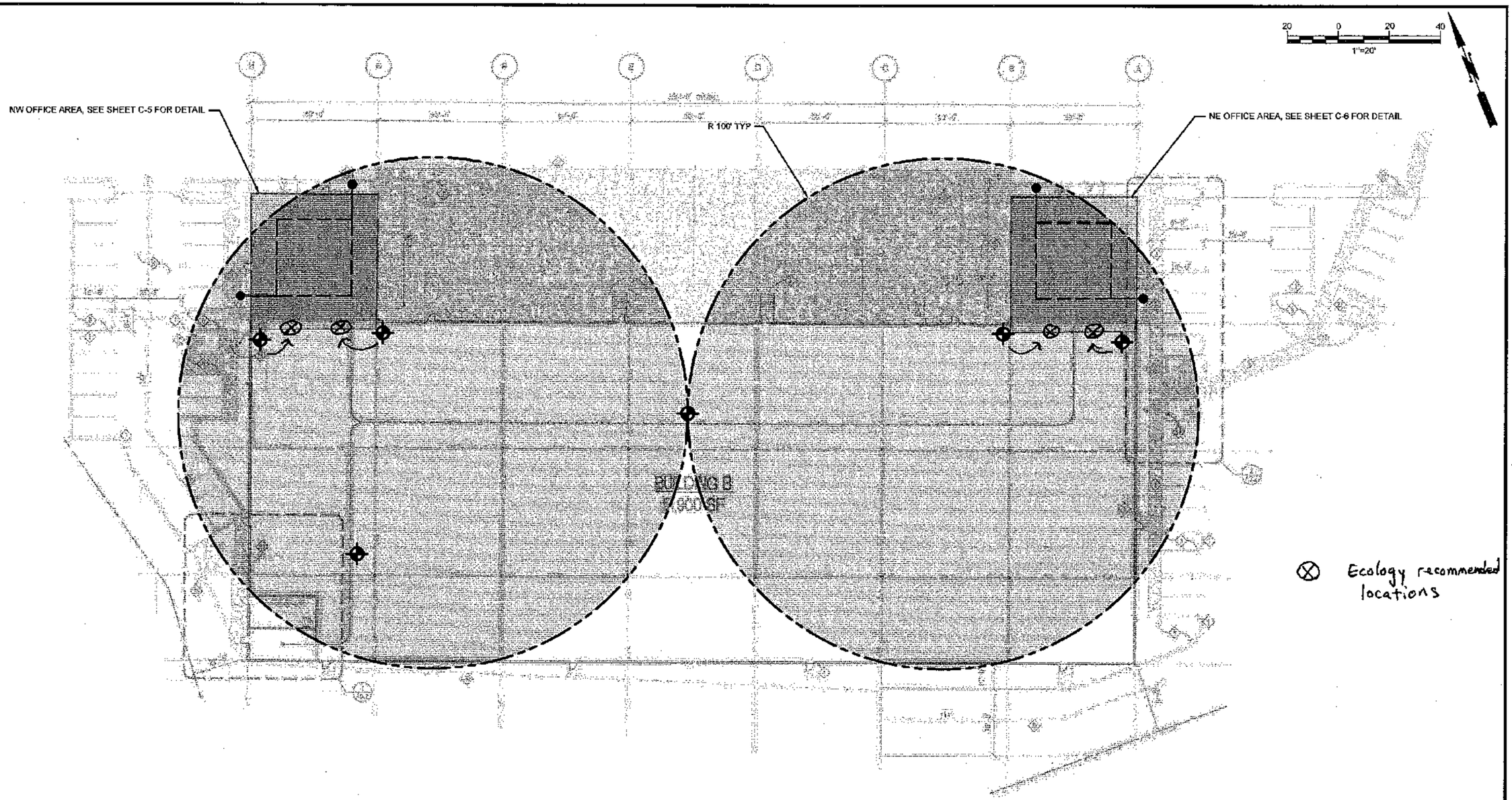
MICHAEL M. SPILLANE STATE OF WASHINGTON 30780 REGISTERED PROFESSIONAL ENGINEER

| | | | |
|---|---|---|---|
| DESIGNED: K. JOHNSON | DRAWN: T. PRESCOTT | | |
| DESIGNED: M. SPILLANE | DRAWN: - | | |
| DESIGNED: - | CHECKED: - | | |
| SCALE: AS NOTED | APPROVED: M. SPILLANE | | |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

BUILDING A SITE PLAN

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-1
SHEET NO: 3 OF 12




**NOTES:**

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2. ALL PENETRATIONS THROUGH MEMBRANE SHALL BE BOOTED AND SEALED. SEE DETAILS 1 AND 2/C-8.
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**LEGEND:**

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- MONITORING LOCATION
- 2" DIA SCH 40 PERFORATED PVC COLLECTION PIPE
- 2" DIA SCH 80 PVC OR GALVANIZED PIPE
- VAPOR MONITORING ZONE
- 30mil PVC MEMBRANE EXTENTS

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MICHAEL M. SPILLANE — STATE OF WASHINGTON — 30780 — REGISTERED PROFESSIONAL ENGINEER

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| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

BUILDING B SITE PLAN

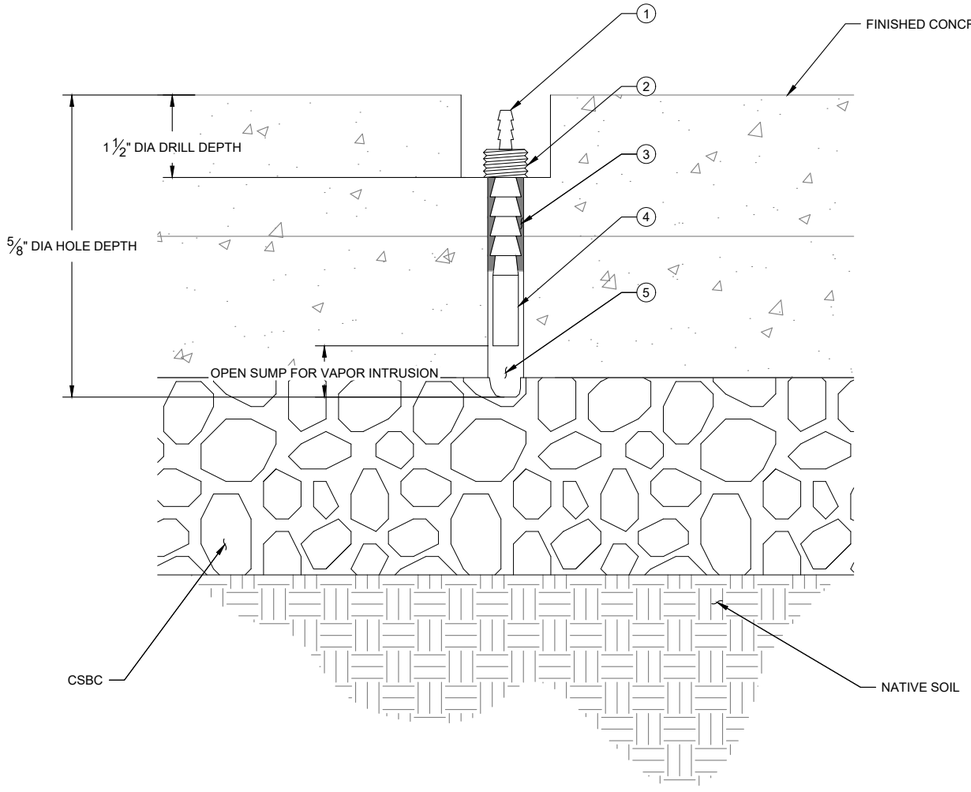
DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-4
SHEET NO: 6 OF 12

## ITEMIZED NOTES:

1. VAPOR PIN STAINLESS STEEL HOSE BARB ADAPTER
2. TREADS FOR STAINLESS STEEL SECURE VAPOR PIN COVER
3. SILICONE SLEEVE
4. 1-1/2" STAINLESS STEEL VAPOR PIN EXTENSION
5. 1" MAX OPEN SUMP FOR VAPOR INTRUSION
6. STAINLESS STEEL SECURE VAPOR PIN COVER
7. SILICONE VAPOR PIN CAP

## INSTALLATION NOTES:

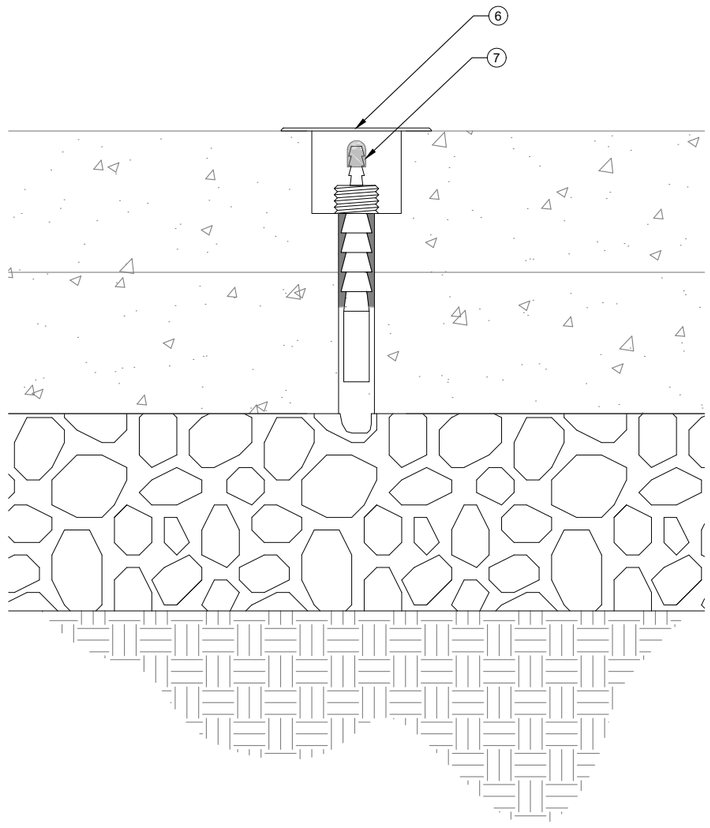
1. SELECT LOCATION FOR THE PERMANENT SUB-SLAB PROBE BASED ON THE OBJECTIVES OF THE PHASE OF WORK, PRESENCE OR POTENTIAL PRESENCE OF OBSTRUCTIONS AND INPUT FROM THE BUILDING OWNER.
2. USING A HAMMER OR CHISEL, CHIP AN "X" IN THE CONCRETE AS A STARTING POINT FOR DRILLING TO PREVENT THE BIT FROM WANDERING OFF THE DESIRED TARGET LOCATION.
3. MARK A DEPTH OF 1-3/4" ON THE 1-1/2" MASONRY BIT AND WRAP WITH DUCT TAPED FLAP. THE FLAP WILL ACT AS A DEPTH GAUGE. WHEN THE DUCT TAPE FLAP HITS THE SLAB, THE BIT IS AT THE APPROPRIATE DEPTH.
4. USING THE VAPOR PIN DRILLING GUIDE PROVIDED DRILL A 5/8" DIAMETER HOLE THROUGH THE SLAB.
5. VACUUM AND CLEAN HOLE HOLE USING THE BRUSH PROVIDED.
6. DAMPEN A PAPER TOWEL WITH DISTILLED WATER AND WIPE AWAY THE DUST FROM 1-1/2" HOLE AND WET THE SIDEWALLS. DO NOT ALLOW EXCESS WATER ON THE TOWEL GO INTO THE SUBSURFACE.
7. SLIDE SILICONE SLEEVE ONTO VAPOR PIN, SCREW 1-1/2" EXTENSION ONTO VAPOR PIN. USING THE INSTALLATION TOOL PROVIDED, HAMMER VAPOR PIN INTO PLACE UNTIL FULLY SEATED.
8. INSTALL VAPOR PIN CAP AND SCREW ACCESS COVER IN PLACE.
9. DETAIL 1 IS A TYPICAL CROSS SECTION OF THE PERMANENT SUB-SLAB VAPOR PIN PROBE DURING THE MONITORING PROCESS.
10. DETAIL 2 IS A TYPICAL CROSS SECTION OF THE PERMANENT SUB-SLAB VAPOR PIN PROBE CAPPED FLUSH WITH THE FINISH GRADE.




DETAIL - SUB-SLAB VAPORPIN PROBE DURING MONITORING

SCALE: NTS

1 / C-1




DETAIL - SUB-SLAB VAPORPIN PROBE CAPPED

SCALE: NTS

2 / -

PHOTO - INSTALLED VAPOR PIN

SCALE: NTS

3 / -

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| DESIGNED: M. SPILLANE | DRAWN: - |
| DESIGNED: - | CHECKED: - |
| SCALE: AS NOTED | APPROVED: M. SPILLANE |

**AVE 55**
TAYLOR WAY METHANE MITIGATION

SUB-SLAB VAPOR PIN PROBE INSTALLATION

DATE: AUGUST 2018
PROJECT NO: 16-06475-000
DRAWING NO: C-10
SHEET NO: 12 OF 12

**Attachment 2**
**Photographs**

Photograph 1. Soil vapor pin with extension next to slab for comparison.

Photograph 2. Hammering vapor pin in place.

Photograph 3. Vapor pin.


Photograph 4. Vapor pin with flushed-cover.

Photograph 5. Aerial of property; view to the southwest. Building A is in the lower portion of the photo, and Building B is adjacent to and southwest of Building A.

Photograph 6. Building A interior; northeast corner facing west.

Photograph 7. Building A interior; northeast office node.

Photograph 8. Building A interior; northwest corner facing east.

Photograph 9. Building A interior; northwest office node.

Photograph 10. Building A interior; southwest corner facing east.

**Attachment 3**
**Vapor Pin Standard Operating Procedure**

# Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated September 9, 2016

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.

**Figure 1.** Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

**Figure 2.** Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).

**Figure 3.** Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

**Figure 4.** Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the Nylaflow tubing (Figure 5). Put the

Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.

**Figure 5.** VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

**Figure 6.** Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

**Figure 7.** Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.

**Attachment 4**
**Soil Vapor Sampling Sheets**

**SOIL VAPOR SAMPLING SHEET**

Site Reference: Arco 55 - Taylor Way

Address:

Date: 9/12/18

Personnel: Gabe C & Kara Hitchkd

| | Vacuum Test | | Purging | | | | Helium | | Sampling | | | | PID | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil Vapor Sampling Point ID | Time Start Vacuum Testing | Time Stop Vacuum Testing | Time Start Purging | Time Stop Purging | Purging Rate (ml/min) | Total Volume Purged (ml) | Time of Helium Reading | Helium Reading (%) | Time Start Sampling | Time Stop Sampling | Canister Vacuum Before Sampling (in Hg) | Canister Vacuum After Sampling (in Hg) | Time of PID Reading | PID Reading | Notes (CAN ID / FLOW ID) |
| VP-4 | 1103 | 1108 | 1114 | 1115 | ~~167~~ 150 | | 1117 | 18 | 1116 | 1121 | 28 | 4.5 | 1122 | 0.0 | 3672/256 |
| VP-6 | 1159 | 1204 | 1204 | 1205 | ~~167~~ 150 | | 1208 | 10 | 1206 | 1210 | 30 | 4.5 | 1211 | 1.2 | 2300/108 |
| VP-8 | 1226 | 1231 | 1231 | 1232 | 150 | | 1237 | 10 | 1235 | 1239 | 29.5 | 4.5 | 1240 | 0.1 | 3669/105 |
| VP-10 | 1347 | 1352 | 1352 | 1353 | 150 | | 1355 | 10 | 1353 | 1400 | 30 | 2.8 | 1400 | 0.0 | 3386/01 |
| VP-14 | 1425 | 1430 | 1430 | 1431 | 150 | | 1445 | 10 | 1442 | 1448 | 29.5 | 4.5 | 1449 | 0.4 | 2298/201 |
| VP-13 | 1515 | 1520 | 1520 | 1521 | 150 | | 1525 | 10 | 1522 | 1527 | 29.5 | 4.5 | 1528 | 0.0 | 3389/101 |
| | | | | | | | | | | | | | | | |
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Notes:

Helium varies between 10% & as high as 30%
Fixed to keep it @ 10%

## SOIL VAPOR SAMPLING SHEET

Site Reference: Ave 55 - Taylor Way

Address:

Date: 9/6/18

Personnel:

| Soil Vapor Sampling Point ID | Vacuum Test | | Purging | | | | Helium | | Sampling | | | | PID | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time Start Vacuum Testing | Time Stop Vacuum Testing | Time Start Purging | Time Stop Purging | Purging Rate (ml/min) | Total Volume Purged (ml) | Time of Helium Reading | Helium Reading (%) | Time Start Sampling | Time Stop Sampling | Canister Vacuum Before Sampling (in Hg) | Canister Vacuum After Sampling (in Hg) | Time of PID Reading | PID Reading | Canister ID / Flow Cont. Notes |
| VP-1 | 0907 | 0912 | 0912 | 0913 | 167 150 | | 0918 | 15% | 0919 | 0926 | 30 | 4.5 | 0928 | 3.5 | 3252 / 31 |
| VP-2 | 0951 | 0956 | 0957 | 0958 | 167 150 | | 0957 | 40% | 0957 | 1010 | 30 | 4.5 | 1016 | 0.0 | 3378 / 02 |
| VP-2D | 0951 | 0956 | 0957 | 0958 | 150 | | 0957 | 40% | 0957 | 1005 | 30 | 4.5 | 1016 | 0.0 | 3258 / 102 |
| VP-3 | 10:38 | 10:43 | 1044 | 10:45 | | | 10:47 | 10% | 10:47 | 10:51 | 30 | 4.5 | 10:54 | 0.0 | 2301 / 106 |
| VP-5 | 11:39 | 11:44 | 11:44 | 11:45 | | | 11:48 | 10% | 11:46 | 11:50 | 29.5 | 4.5 | 11:51 | 0.0 | 2435 / 07 |
| VP-7 | 12:21 | 12:26 | 12:26 | 12:27 | | | 12:29 | 10% | 12:28 | 12:32 | 28.5 | 4.5 | 12:34 | 0.0 | 3251 / 109 |
| VP-9 | 13:28 | 13:33 | 13:34 | 13:35 | | | 13:40 | 5% | 13:36 | 13:42 | 30 | 4.5 | 13:45 | 0.0 | 2297 / 231 |
| VP-11 | 14:18 | 14:23 | 14:23 | 14:24 | | | 14:31 | 5% | 14:28 | 14:32 | 28.7 | 4.5 | 14:35 | 0.0 | 3677 / 257 |
| VP-12 | 15:02 | 15:07 | 15:07 | 15:08 | | | 15:09 | 5% | 15:09 | 15:15 | 29.1 | 4.5 | 15:16 | 0.0 | 2437 / 03 |
| VP-2B | 15:47 | 15:53 | 15:53 | 15:54 | ↓ | | 15:56 | 10% | 15:54 | 16:03 | 29.5 | 4.5 | 16:03 | 0.0 | 3674 / 111 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

Notes:

200 cc/min = 4.31 min sample time to 4.5 in Hg

• Switched to new helium canister for VP-9 and wasn't able to get the percent up to 10.

# Soil Vapor Sampling Sheet

Site Reference: Taylor Way
Address: _____

Date: 10/24/18
Personnel: Kara and Erika

| Soil Vapor Sampling Point ID | Vacuum Test | | Purging | | | | Helium | | Sampling | | | | PID | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time Start Vacuum Testing | Time Stop Vacuum Testing | Time Start Purging | Time Stop Purging | Purging Rate ~~(ml/min)~~ cc/min | Total Volume Purged ~~(ml)~~ cc | Time of Helium Reading | Helium Reading (%) | Time Start Sampling | Time Stop Sampling | Canister Vacuum Before Sampling (in Hg) | Canister Vacuum After Sampling (in Hg) | Time of PID Reading | PID Reading | |
| VP-2-102418 | 7:52 | 7:57 | 7:58 | 7:59 | 150 ~~167~~ | 150 | — | — | 7:59 | 8:05 | 29 | 4.5 | 8:10 | 0.0 | 3311 / #242 |
| VP-3 | 8:54 | 8:59 | 9:00 | 9:01 | ~~167~~ | | — | — | 9:03 | 9:08 | 28.5 | 4.5 | 9:11 | 0.0 | 3483 / #258 |
| VP-5 | 9:44 | 9:49 | 9:49 | 9:50 | | | — | — | 9:51 | 9:57 | 29.5 | 4.5 | 10:01 | 0.0 | 3255 / #240 |
| VP-8 | 10:33 | 10:38 | 10:39 | 10:40 | | | — | — | 10:41 | 10:46 | 29.5 | 4.5 | 10:50 | 0.0 | 3676 / #241 |
| VP-11 | 11:19 | 11:25 | 11:25 | 11:26 | | | — | — | 11:27 | 11:33 | 29.5 | 4.5 | 11:35 | 0.0 | 2436 / #230 |
| VP-9 | 11:56 | 12:01 | 12:01 | 12:02 | | | — | — | 12:02 | 12:07 | 29 | 4.5 | 12:09 | 0.0 | 3347 / #244 |

Notes: _____

# Soil Vapor Sampling Sheet

Site Reference: Ave 55 - Taylor Way
Address: _____

Date: 10/24/18
Personnel: G. Cisneros . K. Hitchko

| Soil Vapor Sampling Point ID | Vacuum Test | | Purging | | | | Helium | | Sampling | | | | PID | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time Start Vacuum Testing | Time Stop Vacuum Testing | Time Start Purging | Time Stop Purging | Purging Rate (ml/min) 150 | Total Volume Purged (ml) | Time of Helium Reading (Sumas Canister Pump) | Helium Reading (%) | Time Start Sampling | Time Stop Sampling | Canister Vacuum Before Sampling (in Hg) | Canister Vacuum After Sampling (in Hg) | Time of PID Reading | PID Reading | Flow To | Notes Canister To |
| VP-1-102418 | 0819 | 0825 | 0837 | 0838 | ~~200~~ 150 | | 200 N/A | N/A | 0838 | 0843 | 28 | 4.5 | 0844 | 0.0 | 257 | 3257 |
| VP-1-102418 Dup | 0832 | 0837 | 0837 | 0838 | ~~200~~ | | ↓ | | 0838 | 0843 | 27.5 | 4.5 | " | 0.6 | 296 | 3390 |
| VP-4-102418 | 0901 | 0906 | 0906 | 0907 | 200 | | | | 0909 | 0913 | 30 | 4.5 | 0914 | 0.0 | 101 | 3668 |
| VP-6-102418 | 0930 | 0935 | 0936 | 0937 | 200 | | 150 ml/min | | 0937 | 0942 | 28.5 | 4.5 | 0943 | 0.0 | 204 | 2299 |
| VP-7-102418 | 0956 | 1001 | 1001 | 1002 | 150 | | 150 ml/min | | 1002 | 1008 | 30 | 4.5 | 1009 | 0.0 | 224 | 3344 |
| VP-12-102418 | 1024 | 1029 | 1029 | 1030 | 150 | | 150 ml/min | | 1030 | 1035 | 29.5 | 4.5 | 1036 | 0.0 | 243 | 3672 |
| VP-13-102418 | 1042 | 1047 | 1047 | 1048 | 150 | | 150 ml/min | | 1048 | 1054 | 30 | 4.5 | 1055 | 0.0 | 203 | 3387 |
| VP-14-102418 | 1114 | 1119 | 1119 | 1121 | 150 | | 150 ml/min | | 1121 | 1127 | 30 | 4.5 | 1128 | 0.0 | 221 | 3260 |
| VP-10-102418 | 1148 | 1153 | 1153 | 1154 | 150 | | 150 ml/min | | 1155 | 1201 | 29 | 4.0 | 1202 | 0.0 | 17 | 2433 |

Notes: _____

**Attachment 5**
**Laboratory Reports**

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 28, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 12, 2018 from the Ave 55-Taylor Way, F&BI 809188 project. There are 38 pages included in this report.

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
FDS0928R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55-Taylor Way project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 809188 -01 | VP-1-091218 |
| 809188 -02 | VP-2-091218 |
| 809188 -03 | VP-2-091218 Dup |
| 809188 -04 | VP-3-091218 |
| 809188 -05 | VP-5-091218 |
| 809188 -06 | VP-7-091218 |
| 809188 -07 | VP-9-091218 |
| 809188 -08 | VP-4-091218 |
| 809188 -09 | VP-6-091218 |
| 809188 -10 | VP-8-091218 |
| 809188 -11 | VP-10-091218 |
| 809188 -12 | VP-14-091218 |
| 809188 -13 | VP-13-091218 |
| 809188 -14 | VP-11-091218 |
| 809188 -15 | VP-12-091218 |
| 809188 -16 | VP-2B-091218 |

The helium analysis will be sent in an additional report.

Several TO-15 and APH analytes exceeded the calibration range. The data were qualified accordingly.

Several TO15 compounds were present in the samples at a concentration less than 10 times the concentration in the method blank. The data were qualified accordingly.

Non-petroleum compounds with a Q value greater than 85 were subtracted from the APH ranges for all samples.

All quality control requirements were acceptable.

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-01 1/10 |
| Date Analyzed: | 09/20/18 | Data File: | 091930.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 105 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 11,000 |
| APH EC9-12 aliphatics | 21,000 ve |
| APH EC9-10 aromatics | 2,700 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-02 1/3.3 |
| Date Analyzed: | 09/19/18 | Data File: | 091915.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,800 |
| APH EC9-12 aliphatics | 330 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 Dup | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-03 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091916.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,000 |
| APH EC9-12 aliphatics | 310 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-04 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091917.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,100 |
| APH EC9-12 aliphatics | 180 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-05 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091918.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,400 |
| APH EC9-12 aliphatics | 360 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-06 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091919.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,900 ve |
| APH EC9-12 aliphatics | 170 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-07 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091920.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 86 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,400 |
| APH EC9-12 aliphatics | 220 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-08 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091921.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 820 |
| APH EC9-12 aliphatics | 130 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-09 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091922.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,900 |
| APH EC9-12 aliphatics | 530 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-10 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091923.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 5,900 ve |
| APH EC9-12 aliphatics | 1,100 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-11 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091924.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,200 |
| APH EC9-12 aliphatics | 360 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-12 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091925.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,600 |
| APH EC9-12 aliphatics | 520 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-13 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091926.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 87 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 800 |
| APH EC9-12 aliphatics | 150 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-14 1/4.2 |
| Date Analyzed: | 09/20/18 | Data File: | 091929.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,900 |
| APH EC9-12 aliphatics | 6,000 |
| APH EC9-10 aromatics | <100 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-15 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091927.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 820 |
| APH EC9-12 aliphatics | 180 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2B-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-16 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091928.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,300 |
| APH EC9-12 aliphatics | 420 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/19/18 | Lab ID: | 08-2081 mb |
| Date Analyzed: | 09/19/18 | Data File: | 091911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-01 1/10 |
| Date Analyzed: | 09/20/18 | Data File: | 091930.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 113 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 8.3 | 2.3 | 1-Butanol | <61 | <20 |
| Propene | 1,300 ve | 740 ve | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 120 | 24 | Benzene | 28 | 8.6 |
| Chloromethane | 7.3 | 3.5 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 1,600 ve | 700 ve | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | 3.3 | 0.71 |
| 1,3-Butadiene | 4.7 | 2.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <16 | <4 | Bromodichloromethane | 5.8 | 0.86 |
| Chloroethane | 4.9 | 1.8 | Trichloroethene | 9.1 | 1.7 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | 27 | 16 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 62 | 16 |
| Pentane | 360 | 120 | 1,1,2-Trichloroethane | 1.0 | 0.19 |
| Trichlorofluoromethane | 880 | 160 | 3-Hexanone | <41 | <10 |
| Acetone | 1,300 ve | 560 ve | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 17 | 5.9 | Tetrachloroethene | 17 | 2.5 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | 75 | 17 |
| Cyclopentane | <2.9 | <1 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | 270 | 61 |
| Butanal | <29 | <10 | o-Xylene | 120 | 28 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | 2.3 | 0.45 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | 130 | 27 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | 420 | 85 |
| 1,1-Dichloroethane | 6.0 | 1.5 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 140 | 39 | 1,2,3-Trimethylbenzene | 130 | 27 |
| Chloroform | 6.9 | 1.4 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | 94 | 32 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 5.8 | 1.4 | Naphthalene | 33 | 6.3 |
| 1,1,1-Trichloroethane | 15 | 2.7 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-02 1/3.3 |
| Date Analyzed: | 09/19/18 | Data File: | 091915.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 3.7 | 1.0 | 1-Butanol | 53 | 17 |
| Propene | 410 ve | 240 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 49 | 9.9 | Benzene | 7.0 | 2.2 |
| Chloromethane | 4.4 | 2.1 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 180 | 77 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 80 | 44 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.1 | 0.24 |
| 1,3-Butadiene | 11 | 4.8 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.5 | 0.57 | Trichloroethene | 5.4 | 1.0 |
| Ethanol | 68 | 36 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 6.9 | 4.1 | 4-Methyl-2-pentanone | 26 | 6.2 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 5.8 | 2.7 | Toluene | 11 | 2.9 |
| Pentane | 150 | 52 | 1,1,2-Trichloroethane | 0.65 | 0.12 |
| Trichlorofluoromethane | 560 | 99 | 3-Hexanone | <14 | <3.3 |
| Acetone | 91 | 38 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | 300 | 120 | Hexanal | <14 | <3.3 |
| Isoprene | 7.0 | 2.5 | Tetrachloroethene | 2.6 | 0.38 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.3 fb | 0.34 fb | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.8 | 0.64 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 8.4 | 1.9 |
| Butanal | <9.7 | <3.3 | o-Xylene | 3.0 | 0.70 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 3.3 fb | 0.43 fb | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.6 | 0.64 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 69 | 20 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.9 | 0.59 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.59 | 0.15 | Naphthalene | 1.2 | 0.23 fb |
| 1,1,1-Trichloroethane | 16 | 2.9 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 Dup | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-03 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091916.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 4.1 | 1.2 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 37 | 7.4 | Benzene | 5.2 | 1.6 |
| Chloromethane | 3.3 | 1.6 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 130 | 56 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 66 | 36 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 0.79 | 0.17 |
| 1,3-Butadiene | 6.3 | 2.8 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.1 | 0.42 | Trichloroethene | 2.4 fb | 0.45 fb |
| Ethanol | 52 | 28 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 4.0 | 1.8 | Toluene | 7.9 | 2.1 |
| Pentane | 110 | 37 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 70 | 3-Hexanone | <14 | <3.3 |
| Acetone | 160 | 67 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 4.6 | 1.6 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.8 | 0.43 |
| Cyclopentane | 20 | 6.9 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 5.3 | 1.2 |
| Butanal | <9.7 | <3.3 | o-Xylene | 1.8 | 0.42 |
| Methylene chloride | 410 | 120 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 1.9 | 0.47 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 71 | 20 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.9 | 0.39 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.39 | 0.096 | Naphthalene | 0.59 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 11 | 2.0 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-04 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091917.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 35 | 7.1 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 36 | 16 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 49 | 27 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 1.6 | 0.71 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | <0.89 | <0.16 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.8 | 0.48 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 210 | 37 | 3-Hexanone | <14 | <3.3 |
| Acetone | 28 | 12 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 8.5 | 1.3 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 16 | 4.6 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.69 | 0.14 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.57 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 5.0 | 0.91 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-05 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091918.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.5 | 0.71 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 39 | 7.9 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 56 | 25 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 45 | 25 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.5 | 0.32 |
| 1,3-Butadiene | 2.4 | 1.1 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 5.8 | 1.1 |
| Ethanol | 33 | 18 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 4.9 | 1.3 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 69 | 3-Hexanone | <14 | <3.3 |
| Acetone | 100 | 42 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | 130 | 52 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.7 | 0.40 |
| Cyclopentane | 1.2 | 0.43 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 7.4 | 1.7 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.4 | 0.54 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 23 | 6.5 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.97 | 0.20 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.16 | 0.040 | Naphthalene | 1.0 fb | 0.20 fb |
| 1,1,1-Trichloroethane | 8.5 | 1.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-06 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091919.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 3.0 | 0.85 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 91 | 18 | Benzene | 1.3 | 0.40 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 610 ve | 270 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 100 | 58 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 5.0 | 1.1 |
| 1,3-Butadiene | 25 | 11 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 0.93 | 0.35 | Trichloroethene | 2.8 | 0.51 |
| Ethanol | 38 | 20 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 15 | 8.8 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 9.2 | 4.2 | Toluene | 3.7 | 0.98 |
| Pentane | 55 | 19 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2,200 ve | 400 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 170 | 70 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 1.0 | 0.36 | Tetrachloroethene | 3.1 | 0.46 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 2.1 | 0.52 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | 19 | 6.6 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.8 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 1.6 | 0.37 |
| Methylene chloride | 470 | 140 | Styrene | <2.8 | <0.66 |
| CFC-113 | 4.6 fb | 0.60 fb | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 4.9 | 1.2 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 33 | 9.4 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.6 | 0.54 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.2 | 0.29 | Naphthalene | 0.74 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 23 | 4.1 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-07 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091920.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 3.8 | 0.77 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 2.2 fb | 0.41 fb |
| Ethanol | 28 | 15 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 5.4 | 1.4 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 6.1 | 1.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 48 | 20 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.6 | 0.53 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.6 | 0.59 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 10 | 2.3 |
| Butanal | <9.7 | <3.3 | o-Xylene | 3.0 | 0.70 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 13 | 3.8 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.0 | 0.61 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.6 fb | 0.31 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-08 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091921.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.5 | 0.42 | 1-Butanol | 54 | 18 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 17 | 3.5 | Benzene | 1.1 | 0.34 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 34 | 19 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 6.8 | 1.3 |
| Ethanol | 46 | 24 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.7 fb | 0.44 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 150 | 27 | 3-Hexanone | <14 | <3.3 |
| Acetone | 130 | 56 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 5.3 | 0.78 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 13 | 3.6 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.5 | 0.51 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.71 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 4.0 | 0.73 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-09 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091922.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.8 | 0.52 | 1-Butanol | <20 | <6.6 |
| Propene | 470 ve | 280 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 74 | 15 | Benzene | 20 | 6.2 |
| Chloromethane | 3.2 | 1.5 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 700 ve | 310 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 0.96 | 0.21 |
| 1,3-Butadiene | 29 | 13 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.1 | 0.41 | Trichloroethene | 2.8 | 0.53 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 15 | 8.9 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 11 | 5.2 | Toluene | 17 | 4.4 |
| Pentane | 240 | 80 | 1,1,2-Trichloroethane | 0.27 fb | 0.049 fb |
| Trichlorofluoromethane | 1,100 ve | 190 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 210 | 89 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 7.3 | 2.6 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.6 | 0.40 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 7.7 | 1.8 |
| Cyclopentane | 20 | 7.0 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 14 | 3.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 4.9 | 1.1 |
| Methylene chloride | <290 | <82 | Styrene | 3.4 | 0.81 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 1.4 | 0.35 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 100 | 29 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.1 | 0.43 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 11 | 3.7 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.1 | 0.26 | Naphthalene | 0.88 fb | 0.17 fb |
| 1,1,1-Trichloroethane | 11 | 2.0 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-10 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091923.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 11 | 3.1 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 57 | 12 | Benzene | 26 | 8.0 |
| Chloromethane | 4.0 | 1.9 | Cyclohexane | 36 | 10 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 1,200 ve | 510 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | 0.92 | 0.36 | 1,2-Dichloropropane | 2.9 | 0.62 |
| 1,3-Butadiene | 47 | 21 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.9 | 1.5 | Trichloroethene | 4.4 | 0.81 |
| Ethanol | 32 | 17 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 39 | 23 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 25 | 12 | Toluene | 24 | 6.5 |
| Pentane | 470 | 160 | 1,1,2-Trichloroethane | 0.83 | 0.15 |
| Trichlorofluoromethane | 960 ve | 170 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 1,300 ve | 540 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 16 | 5.6 | Tetrachloroethene | 5.4 | 0.80 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 3.0 | 0.76 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 15 | 3.4 |
| Cyclopentane | 72 | 25 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | 22 | 7.7 | m,p-Xylene | 13 | 3.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.3 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 9.4 | 1.2 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | 27 | 8.7 | Benzyl chloride | 0.29 fb | 0.056 fb |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 9.2 | 2.3 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 79 | 22 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 4.7 | 0.96 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 21 | 7.1 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 2.2 | 0.54 | Naphthalene | 1.5 fb | 0.29 fb |
| 1,1,1-Trichloroethane | 20 | 3.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-11 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091924.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 5.0 | 1.4 | 1-Butanol | 59 | 20 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 7.8 | 1.6 | Benzene | <1.1 | <0.33 |
| Chloromethane | 0.88 | 0.43 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 160 | 91 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.088 fb | 0.040 fb | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | <0.89 | <0.16 |
| Ethanol | 41 | 22 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.6 fb | 0.43 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 120 | 21 | 3-Hexanone | <14 | <3.3 |
| Acetone | 30 | 13 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 14 | 3.9 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.7 | 0.77 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.1 fb | 0.20 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-12 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091925.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.9 | 0.82 | 1-Butanol | 21 | 7.0 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | 62 | 9.9 |
| Dichlorodifluoromethane | 59 | 12 | Benzene | 3.6 | 1.1 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 410 ve | 180 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 110 | 59 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 16 | 7.2 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 94 | 18 |
| Ethanol | 71 | 38 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 14 | 8.2 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 16 | 7.6 | Toluene | 9.3 | 2.5 |
| Pentane | 260 | 87 | 1,1,2-Trichloroethane | 4.9 | 0.89 |
| Trichlorofluoromethane | 13 | 2.3 | 3-Hexanone | <14 | <3.3 |
| Acetone | 99 | 42 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 47 | 17 | Tetrachloroethene | 31 | 4.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 10 | 2.6 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.6 | 0.36 |
| Cyclopentane | 28 | 9.7 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.4 | 1.0 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.2 | 0.50 |
| Methylene chloride | 300 | 86 | Styrene | <2.8 | <0.66 |
| CFC-113 | 18 | 2.3 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.4 | 0.59 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 120 | 34 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 4.3 | 0.87 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.13 fb | 0.033 fb | Naphthalene | 1.1 fb | 0.20 fb |
| 1,1,1-Trichloroethane | 6.9 | 1.3 | Hexachlorobutadiene | 2.6 | 0.24 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-13 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091926.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 7.0 | 2.0 | 1-Butanol | 100 | 33 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | 6.2 | 0.99 |
| Dichlorodifluoromethane | 6.5 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | 2.0 | 0.98 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.095 fb | 0.043 fb | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 6.5 | 1.2 |
| Ethanol | 82 | 44 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.4 fb | 0.38 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 45 | 8.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 44 | 18 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 7.6 | 1.1 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | 2,200 ve | 630 ve | Styrene | <2.8 | <0.66 |
| CFC-113 | 3.3 | 0.43 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 38 | 11 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 5.2 | 1.1 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.54 fb | 0.10 fb |
| 1,1,1-Trichloroethane | 2.1 fb | 0.39 fb | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-14 1/4.2 |
| Date Analyzed: | 09/20/18 | Data File: | 091929.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 4.0 | 1.1 | 1-Butanol | <25 | <8.4 |
| Propene | <2.9 | <1.7 | Carbon tetrachloride | <2.6 | <0.42 |
| Dichlorodifluoromethane | 6.0 | 1.2 | Benzene | 11 | 3.4 |
| Chloromethane | <0.87 | <0.42 | Cyclohexane | 31 fb | 9.1 fb |
| F-114 | <2.9 | <0.42 | 2-Pentanone | <15 | <4.2 |
| Isobutene | 95 | 41 | 3-Pentanone | <15 | <4.2 |
| Acetaldehyde | 320 | 180 | Pentanal | <15 | <4.2 |
| Vinyl chloride | <1.1 | <0.42 | 1,2-Dichloropropane | <0.97 | <0.21 |
| 1,3-Butadiene | 3.9 | 1.8 | 1,4-Dioxane | <1.5 | <0.42 |
| Bromomethane | <6.5 | <1.7 | Bromodichloromethane | 3.2 | 0.48 |
| Chloroethane | <1.1 | <0.42 | Trichloroethene | 28 | 5.2 |
| Ethanol | 55 | 29 | cis-1,3-Dichloropropene | <1.9 | <0.42 |
| Acetonitrile | <7.1 | <4.2 | 4-Methyl-2-pentanone | <17 | <4.2 |
| Acrolein | <3.9 | <1.7 | trans-1,3-Dichloropropene | <1.9 | <0.42 |
| Acrylonitrile | <0.91 | <0.42 | Toluene | 25 | 6.5 |
| Pentane | 77 | 26 | 1,1,2-Trichloroethane | 3.8 | 0.69 |
| Trichlorofluoromethane | 5.9 | 1.0 | 3-Hexanone | <17 | <4.2 |
| Acetone | <20 | <8.4 | 2-Hexanone | <17 | <4.2 |
| 2-Propanol | <36 | <15 | Hexanal | <17 | <4.2 |
| Isoprene | 1.2 | 0.44 | Tetrachloroethene | 14 | 2.1 |
| Iodomethane | <2.4 | <0.42 | Dibromochloromethane | <0.36 | <0.042 |
| 1,1-Dichloroethene | 6.8 | 1.7 | 1,2-Dibromoethane (EDB) | <0.32 | <0.042 |
| Methacrolein | <12 | <4.2 | Chlorobenzene | <1.9 | <0.42 |
| trans-1,2-Dichloroethene | 2.0 | 0.50 | Ethylbenzene | 3.3 | 0.77 |
| Cyclopentane | <1.2 | <0.42 | 1,1,2,2-Tetrachloroethane | <0.58 | <0.084 |
| Methyl vinyl ketone | <12 | <4.2 | m,p-Xylene | 10 | 2.3 |
| Butanal | <12 | <4.2 | o-Xylene | 8.7 | 2.0 |
| Methylene chloride | <360 | <100 | Styrene | <3.6 | <0.84 |
| CFC-113 | 12 | 1.6 | Bromoform | <8.7 | <0.84 |
| Carbon disulfide | <26 | <8.4 | Benzyl chloride | 0.63 | 0.12 |
| Methyl t-butyl ether (MTBE) | <7.6 | <2.1 | 1,3,5-Trimethylbenzene | <10 | <2.1 |
| Vinyl acetate | <30 | <8.4 | 1,2,4-Trimethylbenzene | <10 | <2.1 |
| 1,1-Dichloroethane | 7.5 | 1.9 | 1,3-Dichlorobenzene | <2.5 | <0.42 |
| cis-1,2-Dichloroethene | 4.5 | 1.1 | 1,4-Dichlorobenzene | <1 | <0.17 |
| Hexane | 33 | 9.4 | 1,2,3-Trimethylbenzene | <10 | <2.1 |
| Chloroform | 0.45 | 0.092 | 1,2-Dichlorobenzene | <2.5 | <0.42 |
| 2-Butanone (MEK) | <12 | <4.2 | 1,2,4-Trichlorobenzene | <3.1 | <0.42 |
| 1,2-Dichloroethane (EDC) | 0.27 | 0.067 | Naphthalene | 1.7 fb | 0.33 fb |
| 1,1,1-Trichloroethane | 9.1 | 1.7 | Hexachlorobutadiene | 0.90 fb | 0.084 fb |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-15 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091927.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | 2.7 | 1.6 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 4.3 | 0.88 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.088 | 0.040 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.5 fb | 0.28 fb |
| Ethanol | 43 | 23 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.3 | 0.60 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 33 | 5.9 | 3-Hexanone | <14 | <3.3 |
| Acetone | 25 | 11 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.0 | 0.44 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 2.9 | 0.67 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.7 | 0.75 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.1 fb | 0.21 fb |
| 1,1,1-Trichloroethane | 2.1 fb | 0.38 fb | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/19/18 | Lab ID: | 08-2081 mb |
| Date Analyzed: | 09/19/18 | Data File: | 091911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.14 lc | 0.026 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: 809150-01 1/5 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 30) |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 3,400 | 3,300 | 3 |
| APH EC9-12 aliphatics | ug/m3 | 1,000 | 1,000 | 0 |
| APH EC9-10 aromatics | ug/m3 | 300 | 320 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 45 | 80 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 45 | 116 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 45 | 94 | 70-130 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 114 | 70-130 |
| Propene | ppbv | 5 | 101 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 108 | 70-130 |
| Chloromethane | ppbv | 5 | 102 | 70-130 |
| F-114 | ppbv | 5 | 111 | 70-130 |
| Isobutene | ppbv | 5 | 105 | 70-130 |
| Acetaldehyde | ppbv | 5 | 124 | 70-130 |
| Vinyl chloride | ppbv | 5 | 107 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 116 | 70-130 |
| Bromomethane | ppbv | 5 | 118 | 70-130 |
| Chloroethane | ppbv | 5 | 104 | 70-130 |
| Ethanol | ppbv | 5 | 91 | 70-130 |
| Acetonitrile | ppbv | 5 | 98 | 70-130 |
| Acrolein | ppbv | 5 | 103 | 70-130 |
| Acrylonitrile | ppbv | 5 | 123 | 70-130 |
| Pentane | ppbv | 5 | 107 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 111 | 70-130 |
| Acetone | ppbv | 5 | 102 | 70-130 |
| 2-Propanol | ppbv | 5 | 111 | 70-130 |
| Isoprene | ppbv | 5 | 110 | 70-130 |
| Iodomethane | ppbv | 5 | 107 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 108 | 70-130 |
| Methacrolein | ppbv | 5 | 102 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 108 | 70-130 |
| Cyclopentane | ppbv | 5 | 112 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 120 | 70-130 |
| Butanal | ppbv | 5 | 97 | 70-130 |
| Methylene chloride | ppbv | 5 | 82 | 70-130 |
| CFC-113 | ppbv | 5 | 107 | 70-130 |
| Carbon disulfide | ppbv | 5 | 100 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 111 | 70-130 |
| Vinyl acetate | ppbv | 5 | 106 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 111 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 106 | 70-130 |
| Hexane | ppbv | 5 | 115 | 70-130 |
| Chloroform | ppbv | 5 | 113 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 109 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 113 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 115 | 70-130 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| 1-Butanol | ppbv | 5 | 96 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 108 | 70-130 |
| Benzene | ppbv | 5 | 110 | 70-130 |
| Cyclohexane | ppbv | 5 | 103 | 70-130 |
| 2-Pentanone | ppbv | 5 | 106 | 70-130 |
| 3-Pentanone | ppbv | 5 | 113 | 70-130 |
| Pentanal | ppbv | 5 | 94 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 103 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 111 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 110 | 70-130 |
| Trichloroethene | ppbv | 5 | 101 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 99 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 96 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 105 | 70-130 |
| Toluene | ppbv | 5 | 98 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 104 | 70-130 |
| 3-Hexanone | ppbv | 5 | 101 | 70-130 |
| 2-Hexanone | ppbv | 5 | 100 | 70-130 |
| Hexanal | ppbv | 5 | 98 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 101 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 119 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 111 | 70-130 |
| Chlorobenzene | ppbv | 5 | 106 | 70-130 |
| Ethylbenzene | ppbv | 5 | 109 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 118 | 70-130 |
| m,p-Xylene | ppbv | 10 | 116 | 70-130 |
| o-Xylene | ppbv | 5 | 123 | 70-130 |
| Styrene | ppbv | 5 | 109 | 70-130 |
| Bromoform | ppbv | 5 | 114 | 70-130 |
| Benzyl chloride | ppbv | 5 | 126 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 110 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 105 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 114 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 124 | 70-130 |
| 1,2,3-Trimethylbenzen e | ppbv | 5 | 107 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 117 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 101 | 70-130 |
| Naphthalene | ppbv | 5 | 100 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 108 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18

Page # 1 of 3

Report To: Tom Colligan
Company: Floyd Snider
Address: 601 Union St, Suite 600
City, State, ZIP: Seattle, WA 98101
Phone: 206-292-2078 Email: tom.colligan@floydsnider.com

SAMPLERS (signature): Kora, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) | Helium | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-1-091218 | 01 | 3252 | 31 | 9/12/18 | 30 | 0919 | 4.5 | 0926 | X | X | X | | *See table 3 for full |
| VP-2-091218 | 02 | 3378 | 02 | | 30 | 0957 | 4.5 | 1010 1010 | | | | | list of VOCs |
| VP-2-091218 Dup | 03 | 3258 | 102 | | 30 | 0957 | 4.5 | 1005 1010 | | | | | |
| VP-3-091218 | 04 | 2301 | 106 | | 30 | 10:47 | 4.5 | 10:51 | | | | | |
| ~~VP-4-091218~~ | — | ~~3672~~ | ~~256~~ | | | | | | | | | | |
| VP-5-091218 | 05 | 2435 | 07 | | 29.5 | 11:46 | 4.5 4.5 11:50 | 11:50 | | | | | |
| VP-7-091218 | 06 | 3251 | 109 | | 28.5 | 12:28 | 4.5 | 12:32 | | | | | |
| VP-9-091218 | 07 | 2297 | 231 | | 30 | 13:36 | 4.5 4.5 | 13:42 | | | | | |

Samples received at 21 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Lyon | F-S | 9/13/18 | 900 |
| 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\COCTO-15.DOC

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18



Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | VPH (MA-APH) | Helium TO-15sc Mod | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-091218 | 08 | 3672 | 252 | 9/12/18 | 28 | 1117 | 4.5 | 1124 | X | X | X | | *See table 3 for full |
| VP-6-091218 | 09 | 2300 | 108 | 9/12/18 | 30 | 1206 | 4.5 | 1210 | | | | | list of VOCs |
| VP-8-091218 | 10 | 3669 | 105 | 9/12 | 29.5 | 1235 | 4.5 | 1239 | | | | | |
| VP-10-091218 | 11 | 3386 | 01 | 9/12 | 30 | 1353 | 4.5 | 1400 | | | | | |
| VP-14-091218 | 12 | 2298 | 201 | 9/12 | 29.5 | 1442 | 4.5 | 1448 | | | | | |
| VP-13-091218 | 13 | 3389 | 101 | 9/12 | 29.5 | 1522 | 4.5 | 1529 | ↓ | ↓ | ↓ | | ↓ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabriel Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Yamamoto | FedEx | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

# SAMPLE CHAIN OF CUSTODY

B09188

ME 09-12-18

Page # 3 of 3

Report To Tom Colligan

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 email tom.colligan@floydsnider.com

SAMPLERS (*signature*): Kova, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| | Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) TOGS-EPH/VPH | Fielding Parameters | Archive | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VP-11-091218 | 14 | 3677 | 257 | 9/12/18 | 28.7 | 14:28 | 4.5 | 14:37 | X | X | X | | * See table 3 for full list of VOCs |
| 2 | VP-12-091218 | 15 | 2437 | 03 | ↓ | 29.1 28.7 | 15:09 | 4.5 | 15:15 | ↓ | ↓ | ↓ | | ↓ |
| 3 | VP-2B-091218 | 16 | 3674 | 111 | ↓ | 29.5 | 15:54 15:56 | 4.5 | 16:03 | ↓ | ↓ | ↓ | X | HOLD ANALYSIS |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd\|Snider | 9/12/18 | 1720 |
| Received by: | Eric Hoon | FSS | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 8, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the additional results from the testing of material submitted on September 12, 2018 from the Ave 55-Taylor Way, F&BI 809188 project. There are 5 pages included in this report.

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
FDS1008R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55-Taylor Way, F&BI 809188 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 809188 -01 | VP-1-091218 |
| 809188 -02 | VP-2-091218 |
| 809188 -03 | VP-2-091218 Dup |
| 809188 -04 | VP-3-091218 |
| 809188 -05 | VP-5-091218 |
| 809188 -06 | VP-7-091218 |
| 809188 -07 | VP-9-091218 |
| 809188 -08 | VP-4-091218 |
| 809188 -09 | VP-6-091218 |
| 809188 -10 | VP-8-091218 |
| 809188 -11 | VP-10-091218 |
| 809188 -12 | VP-14-091218 |
| 809188 -13 | VP-13-091218 |
| 809188 -14 | VP-11-091218 |
| 809188 -15 | VP-12-091218 |
| 809188 -16 | VP-2B-091218 |

All quality control requirements were acceptable.

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188
Date Extracted: 10/02/18
Date Analyzed: 10/02/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| VP-1-091218<br>809188-01 | <0.6 |
| VP-2-091218<br>809188-02 | <0.6 |
| VP-2-091218 Dup<br>809188-03 | <0.6 |
| VP-3-091218<br>809188-04 | <0.6 |
| VP-5-091218<br>809188-05 | <0.6 |
| VP-7-091218<br>809188-06 | <0.6 |
| VP-9-091218<br>809188-07 | <0.6 |
| VP-4-091218<br>809188-08 | <0.6 |
| VP-6-091218<br>809188-09 | <0.6 |
| VP-8-091218<br>809188-10 | <0.6 |
| VP-10-091218<br>809188-11 | <0.6 |
| VP-14-091218<br>809188-12 | <0.6 |

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188
Date Extracted: 10/02/18
Date Analyzed: 10/02/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| VP-13-091218<br>809188-13 | <0.6 |
| VP-11-091218<br>809188-14 | <0.6 |
| VP-12-091218<br>809188-15 | <0.6 |
| Method Blank | <0.6 |

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 809188-13 (Duplicate)

| Analyte | Sample Result (%) | Duplicate Result (%) | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|
| Helium | <0.6 | <0.6 | nm | 0-50 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18

Page # 1 of 3

Report To: Tom Colligan
Company: Floyd Snider
Address: 601 Union St, Suite 600
City, State, ZIP: Seattle, WA 98101
Phone: 206-292-2078 Email: tom.colligan@floydsnider.com

SAMPLERS (signature): Kora, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) | Helium | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-1-091218 | 01 | 3252 | 31 | 9/12/18 | 30 | 0919 | 4.5 | 0926 | X | X | X | | *See table 3 for full |
| VP-2-091218 | 02 | 3378 | 02 | | 30 | 0957 | 4.5 | 1010 1010 | | | | | list of VOCs |
| VP-2-091218 Dup | 03 | 3258 | 102 | | 30 | 0957 | 4.5 | 1005 1010 | | | | | |
| VP-3-091218 | 04 | 2301 | 106 | | 30 | 10:47 | 4.5 | 10:51 | | | | | |
| ~~VP-4-091218~~ | — | ~~3672~~ | ~~256~~ | | | | | | | | | | |
| VP-5-091218 | 05 | 2435 | 07 | | 29.5 | 11:46 | 4.5 4.5 11:50 | 11:50 | | | | | |
| VP-7-091218 | 06 | 3251 | 109 | | 28.5 | 12:28 | 4.5 | 12:32 | | | | | |
| VP-9-091218 | 07 | 2297 | 231 | | 30 | 13:36 | 4.5 4.5 | 13:42 | | | | | |

Samples received at 21 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Lyon | F-S | 9/13/18 | 900 |
| 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\COCTO-15.DOC

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18



Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | VPH (MA-APH) | Helium TO-15sc Mod | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-091218 | 08 | 3672 | 252 | 9/12/18 | 28 | 1117 | 4.5 | 1124 | X | X | X | | *See table 3 for full |
| VP-6-091218 | 09 | 2300 | 108 | 9/12/18 | 30 | 1206 | 4.5 | 1210 | | | | | list of VOCs |
| VP-8-091218 | 10 | 3669 | 105 | 9/12 | 29.5 | 1235 | 4.5 | 1239 | | | | | |
| VP-10-091218 | 11 | 3386 | 01 | 9/12 | 30 | 1353 | 4.5 | 1400 | | | | | |
| VP-14-091218 | 12 | 2298 | 201 | 9/12 | 29.5 | 1442 | 4.5 | 1448 | | | | | |
| VP-13-091218 | 13 | 3389 | 101 | 9/12 | 29.5 | 1522 | 4.5 | 1529 | ↓ | ↓ | ↓ | | ↓ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabriel Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Yamamoto | FedEx | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

# SAMPLE CHAIN OF CUSTODY

B09188

ME 09-12-18

Page # 3 of 3

Report To Tom Colligan

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 email tom.colligan@floydsnider.com

SAMPLERS (*signature*): Kova, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| | Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) TOGS-EPH/VPH | Fielding Parameters | Archive | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VP-11-091218 | 14 | 3677 | 257 | 9/12/18 | 28.7 | 14:28 | 4.5 | 14:37 | X | X | X | | * See table 3 for full list of VOCs |
| 2 | VP-12-091218 | 15 | 2437 | 03 | ↓ | 29.1 28.7 | 15:09 | 4.5 | 15:15 | ↓ | ↓ | ↓ | | ↓ |
| 3 | VP-2B-091218 | 16 | 3674 | 111 | ↓ | 29.5 | 15:54 15:56 | 4.5 | 16:03 | ↓ | ↓ | ↓ | X | HOLD ANALYSIS |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd\|Snider | 9/12/18 | 1720 |
| Received by: | Eric Hoon | FSS | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 7, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on October 24, 2018 from the Taylor Way-Ave 55, F&BI 810462 project. There are 25 pages included in this report.

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
FDS1107R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 24, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor Way-Ave 55, F&BI 810462 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 810462 -01 | VP-2-102418 |
| 810462 -02 | VP-1-102418 |
| 810462 -03 | VP-1-102418 Dup |
| 810462 -04 | VP-3-102418 |
| 810462 -05 | VP-5-102418 |
| 810462 -06 | VP-8-102418 |
| 810462 -07 | VP-11-102418 |
| 810462 -08 | VP-9-102418 |
| 810462 -09 | VP-4-102418 |
| 810462 -10 | VP-6-102418 |
| 810462 -11 | VP-7-102418 |
| 810462 -12 | VP-12-102418 |
| 810462 -13 | VP-13-102418 |
| 810462 -14 | VP-14-102418 |
| 810462 -15 | VP-10-102418 |
| 810462 -16 | VP-LB-102418 |

Naphthalene was detected in the TO-15 method blank at a level greater than one tenth the concentration detected in the samples. The data were flagged accordingly.

Several compounds exceeded the calibration range of the instrument. The data were flagged accoridngly.

An 8270D internal standard failed the acceptance criteria for sample VP-3-102418 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-01 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102608.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 47 | 9.6 | Benzene | 8.4 | 2.6 |
| Chloromethane | 2.6 | 1.3 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 140 | 60 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.3 | 0.29 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 2.4 | 0.89 | Trichloroethene | 0.90 | 0.17 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 7.1 | 1.9 |
| Pentane | 120 | 40 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 180 | 32 | 3-Hexanone | <14 | <3.3 |
| Acetone | <16 | <6.6 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 4.8 | 1.7 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.2 | 0.50 |
| Cyclopentane | 32 | 11 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.6 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.1 | 0.77 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 52 | 15 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.6 | 0.54 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.52 | 0.13 | Naphthalene | 0.35 fb | 0.066 fb |
| 1,1,1-Trichloroethane | 9.2 | 1.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-02 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102609.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 111 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 75 | 15 | Benzene | 5.0 | 1.6 |
| Chloromethane | 3.0 | 1.4 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 840 ve | 370 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 110 | 62 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 2.5 | 0.55 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.5 | 1.3 | Trichloroethene | 6.6 | 1.2 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 11 | 2.8 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 410 | 73 | 3-Hexanone | <14 | <3.3 |
| Acetone | 500 ve | 210 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 8.0 | 2.9 | Tetrachloroethene | 11 | 1.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.8 | 0.47 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 6.7 | 1.6 |
| Cyclopentane | 22 | 7.7 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 19 | 4.3 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.1 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | 23 | 4.7 |
| 1,1-Dichloroethane | 5.0 | 1.2 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 52 | 15 | 1,2,3-Trimethylbenzene | 8.5 | 1.7 |
| Chloroform | 3.5 | 0.72 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 3.2 | 0.78 | Naphthalene | 5.5 | 1.0 |
| 1,1,1-Trichloroethane | 9.2 | 1.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 Dup | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-03 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102610.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 111 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 72 | 15 | Benzene | 4.9 | 1.5 |
| Chloromethane | 2.6 | 1.3 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 830 ve | 360 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 2.5 | 0.53 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.6 | 1.3 | Trichloroethene | 8.4 | 1.6 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 12 | 3.3 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 69 | 3-Hexanone | <14 | <3.3 |
| Acetone | 490 ve | 210 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 8.8 | 3.2 | Tetrachloroethene | 11 | 1.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.8 | 0.45 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 6.7 | 1.5 |
| Cyclopentane | 23 | 7.8 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 18 | 4.2 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.0 | 1.8 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | 0.55 | 0.11 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | 24 | 4.9 |
| 1,1-Dichloroethane | 5.1 | 1.3 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 53 | 15 | 1,2,3-Trimethylbenzene | 9.0 | 1.8 |
| Chloroform | 3.9 | 0.81 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 2.9 | 0.73 | Naphthalene | 3.6 | 0.69 |
| 1,1,1-Trichloroethane | 8.8 | 1.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 11/24/18 | Lab ID: | 810462-04 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102611.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 J | <0.33 J | 1-Butanol | <20 J | <6.6 J |
| Propene | <2.3 J | <1.3 J | Carbon tetrachloride | <2.1 J | <0.33 J |
| Dichlorodifluoromethane | 18 J | 3.7 J | Benzene | <1.1 J | <0.33 J |
| Chloromethane | <0.68 J | <0.33 J | Cyclohexane | <23 J | <6.6 J |
| F-114 | <2.3 J | <0.33 J | 2-Pentanone | <12 | <3.3 |
| Isobutene | 16 J | 6.9 J | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 J | <16 J | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 J | <0.33 J | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 J | <0.033 J | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 J | <1.3 J | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 J | <0.33 J | Trichloroethene | 1.1 | 0.20 |
| Ethanol | <25 J | <13 J | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 J | <3.3 J | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 J | <1.3 J | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 J | <0.33 J | Toluene | 2.3 | 0.61 |
| Pentane | <9.7 J | <3.3 J | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 96 J | 17 J | 3-Hexanone | <14 | <3.3 |
| Acetone | 21 J | 8.8 J | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 J | <12 J | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 J | <0.33 J | Tetrachloroethene | 4.7 | 0.69 |
| Iodomethane | <1.9 J | <0.33 J | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3J | <0.33 J | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 J | <3.3 J | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 J | <0.33 J | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 J | <0.33 J | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 J | <3.3 J | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 J | <3.3 J | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 J | <82 J | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 J | <6.6 J | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 J | <1.6 J | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 J | <6.6 J | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 J | <0.33 J | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 J | <0.33 J | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 J | <3.3 J | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.32 J | 0.066 J | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 J | <3.3 J | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 J | <0.033 J | Naphthalene | 0.59 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 2.9 J | 0.54 J | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-04 1/6.25 |
| Date Analyzed: | 11/03/18 | Data File: | 110225.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <2.2 | <0.62 | 1-Butanol | <38 | <12 |
| Propene | <4.3 | <2.5 | Carbon tetrachloride | <3.9 | <0.62 |
| Dichlorodifluoromethane | 23 | 4.6 | Benzene | <2 | <0.62 |
| Chloromethane | <1.3 | <0.62 | Cyclohexane | <43 | <12 |
| F-114 | <4.4 | <0.62 | 2-Pentanone | <22 | <6.2 |
| Isobutene | 17 | 7.4 | 3-Pentanone | <22 | <6.2 |
| Acetaldehyde | <56 | <31 | Pentanal | <22 | <6.2 |
| Vinyl chloride | <1.6 | <0.62 | 1,2-Dichloropropane | <1.4 | <0.31 |
| 1,3-Butadiene | <0.14 | <0.062 | 1,4-Dioxane | <2.3 | <0.62 |
| Bromomethane | <9.7 | <2.5 | Bromodichloromethane | <0.42 | <0.062 |
| Chloroethane | <1.6 | <0.62 | Trichloroethene | 3.0 | 0.56 |
| Ethanol | <47 | <25 | cis-1,3-Dichloropropene | <2.8 | <0.62 |
| Acetonitrile | <10 | <6.2 | 4-Methyl-2-pentanone | <26 | <6.2 |
| Acrolein | <5.7 | <2.5 | trans-1,3-Dichloropropene | <2.8 | <0.62 |
| Acrylonitrile | <1.4 | <0.62 | Toluene | 4.0 | 1.0 |
| Pentane | <18 | <6.2 | 1,1,2-Trichloroethane | <0.34 | <0.062 |
| Trichlorofluoromethane | 110 | 20 | 3-Hexanone | <26 | <6.2 |
| Acetone | <30 | <12 | 2-Hexanone | <26 | <6.2 |
| 2-Propanol | <54 | <22 | Hexanal | <26 | <6.2 |
| Isoprene | <1.7 | <0.62 | Tetrachloroethene | 5.7 | 0.84 |
| Iodomethane | <3.6 | <0.62 | Dibromochloromethane | <0.53 | <0.062 |
| 1,1-Dichloroethene | <2.5 | <0.62 | 1,2-Dibromoethane (EDB) | <0.48 | <0.062 |
| Methacrolein | <18 | <6.2 | Chlorobenzene | <2.9 | <0.62 |
| trans-1,2-Dichloroethene | <2.5 | <0.62 | Ethylbenzene | <2.7 | <0.62 |
| Cyclopentane | <1.8 | <0.62 | 1,1,2,2-Tetrachloroethane | <0.86 | <0.12 |
| Methyl vinyl ketone | <18 | <6.2 | m,p-Xylene | <5.4 | <1.2 |
| Butanal | <18 | <6.2 | o-Xylene | <2.7 | <0.62 |
| Methylene chloride | <540 | <160 | Styrene | <5.3 | <1.2 |
| CFC-113 | <4.8 | <0.62 | Bromoform | <13 | <1.2 |
| Carbon disulfide | <39 | <12 | Benzyl chloride | <0.32 | <0.062 |
| Methyl t-butyl ether (MTBE) | <11 | <3.1 | 1,3,5-Trimethylbenzene | <15 | <3.1 |
| Vinyl acetate | <44 | <12 | 1,2,4-Trimethylbenzene | <15 | <3.1 |
| 1,1-Dichloroethane | <2.5 | <0.62 | 1,3-Dichlorobenzene | <3.8 | <0.62 |
| cis-1,2-Dichloroethene | <2.5 | <0.62 | 1,4-Dichlorobenzene | <1.5 | <0.25 |
| Hexane | <22 | <6.2 | 1,2,3-Trimethylbenzene | <15 | <3.1 |
| Chloroform | 0.46 | 0.094 | 1,2-Dichlorobenzene | <3.8 | <0.62 |
| 2-Butanone (MEK) | <18 | <6.2 | 1,2,4-Trichlorobenzene | <4.6 | <0.62 |
| 1,2-Dichloroethane (EDC) | <0.25 | <0.062 | Naphthalene | 0.75 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 3.7 | 0.68 | Hexachlorobutadiene | <1.3 | <0.12 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-05 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102612.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 29 | 5.9 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 32 | 14 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.2 | 0.26 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 0.89 | 0.16 |
| Ethanol | 51 | 27 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 4.0 | 1.1 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 250 | 45 | 3-Hexanone | <14 | <3.3 |
| Acetone | 35 | 15 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 3.3 | 0.77 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.47 | 0.096 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.50 fb | 0.096 fb |
| 1,1,1-Trichloroethane | 6.4 | 1.2 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-06 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102613.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 29 | 5.9 | Benzene | 8.8 | 2.8 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | 27 | 7.8 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 760 ve | 330 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.8 | 0.39 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 2.4 | 0.91 | Trichloroethene | 6.9 | 1.3 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 12 | 3.2 |
| Pentane | 290 | 98 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 410 | 73 | 3-Hexanone | <14 | <3.3 |
| Acetone | 550 ve | 230 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 18 | 6.4 | Tetrachloroethene | 2.9 | 0.42 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 2.3 | 0.58 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 3.9 | 0.90 |
| Cyclopentane | 74 | 26 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.8 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.2 | 0.50 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 6.9 | 0.90 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 7.2 | 1.8 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 40 | 11 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.1 | 0.44 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.89 | 0.22 | Naphthalene | 0.42 fb | 0.079 fb |
| 1,1,1-Trichloroethane | 13 | 2.4 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-07 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102614.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 3.6 | 0.72 | Benzene | 3.5 | 1.1 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 12 | 5.1 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 11 | 2.0 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 13 | 3.5 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2.7 | 0.49 | 3-Hexanone | <14 | <3.3 |
| Acetone | 25 | 10 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.8 | 0.56 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.5 | 0.37 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.8 | 0.42 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 6.1 | 1.4 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.6 | 0.59 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 2.9 | 0.38 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.7 | 0.66 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | <0.16 | <0.033 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.50 fb | 0.096 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-08 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102615.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.6 | 1.5 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 2.9 | 0.59 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.2 | 0.21 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.3 | 0.62 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 3.6 | 0.64 | 3-Hexanone | <14 | <3.3 |
| Acetone | 17 | 7.1 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.0 | 0.40 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.40 fb | 0.076 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-09 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102616.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 10 | 2.1 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 0.96 | 0.18 |
| Ethanol | 26 | 14 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.1 | 0.57 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 69 | 12 | 3-Hexanone | <14 | <3.3 |
| Acetone | 43 | 18 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 2.2 | 0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.5 | 0.31 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.43 fb | 0.082 fb |
| 1,1,1-Trichloroethane | 2.0 | 0.36 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-10 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102617.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 450 ve | 260 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 140 | 28 | Benzene | 21 | 6.6 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | 25 | 7.4 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 960 ve | 420 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.6 | 0.34 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 0.88 | 0.33 | Trichloroethene | 28 | 5.2 |
| Ethanol | 31 | 17 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 21 | 5.6 |
| Pentane | 380 | 130 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2,000 ve | 360 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 120 | 51 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 12 | 4.2 | Tetrachloroethene | 9.5 | 1.4 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 7.9 | 2.0 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 5.8 | 1.3 |
| Cyclopentane | 39 | 14 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | 11 | 4.0 | m,p-Xylene | 9.1 | 2.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.9 | 0.68 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 8.2 | 1.1 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.8 | 0.93 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 110 | 33 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.1 | 0.64 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.2 | 0.31 | Naphthalene | 0.54 fb | 0.10 fb |
| 1,1,1-Trichloroethane | 23 | 4.1 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-11 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102618.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 77 | 16 | Benzene | 1.1 | 0.34 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 430 ve | 190 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 4.5 | 0.97 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.6 | 0.30 |
| Ethanol | 40 | 21 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 3.7 | 0.98 |
| Pentane | 43 | 15 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 1,700 ve | 290 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 26 | 11 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 2.3 | 0.34 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | 15 | 5.1 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 4.0 | 0.98 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.9 | 0.38 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.80 | 0.20 | Naphthalene | 0.47 fb | 0.089 fb |
| 1,1,1-Trichloroethane | 19 | 3.4 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-12 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102619.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 4.0 | 0.80 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.3 | 0.24 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.7 | 0.73 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 15 c | 2.7 c | 3-Hexanone | <14 | <3.3 |
| Acetone | 18 | 7.6 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.3 | 0.27 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.45 fb | 0.086 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-13 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102620.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 3.2 fb | 1.8 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 6.3 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 35 | 6.6 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 42 | 11 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 29 | 5.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 23 | 9.8 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 8.0 | 1.2 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 8.9 | 2.2 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.6 | 0.60 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 6.8 | 1.6 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.6 | 0.60 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 15 | 2.0 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.8 | 0.95 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.3 | 0.48 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.13 | 0.033 | Naphthalene | 0.36 fb | 0.069 fb |
| 1,1,1-Trichloroethane | 15 | 2.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-14 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102621.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.8 fb | 1.6 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 62 | 12 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 7.4 | 1.4 |
| Ethanol | 49 | 26 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | 38 | 9.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 34 | 9.1 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 12 | 2.2 | 3-Hexanone | <14 | <3.3 |
| Acetone | 58 | 24 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.1 | 0.45 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 5.7 | 1.3 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 27 | 6.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.3 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 4.1 | 0.53 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.3 | 0.27 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 13 | 4.4 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.31 | 0.076 | Naphthalene | 2.3 fb | 0.43 fb |
| 1,1,1-Trichloroethane | 3.3 | 0.61 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-15 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102622.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.4 fb | 1.4 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 6.6 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.8 | 0.33 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 3.5 | 0.92 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 55 | 9.9 | 3-Hexanone | <14 | <3.3 |
| Acetone | 19 | 8.1 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.6 | 0.34 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.45 fb | 0.086 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-LB-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-16 1/10 |
| Date Analyzed: | 11/03/18 | Data File: | 110226.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 18 | 5.1 | 1-Butanol | <61 | <20 |
| Propene | 7.4 fb | 4.3 fb | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | <4.9 | <1 | Benzene | <3.2 | <1 |
| Chloromethane | <2.1 | <1 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | <9.2 | <4 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | 0.35 | 0.16 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <16 | <4 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | <2.7 | <0.5 |
| Ethanol | 86 | 46 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 4.4 | 1.2 |
| Pentane | <30 | <10 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | <5.6 | <1 | 3-Hexanone | <41 | <10 |
| Acetone | 64 | 27 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 13 | 4.5 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | <2.9 | <1 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | 2,500 ve | 730 ve | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | <4 | <1 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 57 | 16 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | <0.49 | <0.1 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | <0.4 | <0.1 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | <5.5 | <1 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2396 mb |
| Date Analyzed: | 10/26/18 | Data File: | 102605.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | <0.1 | <0.02 |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2449 mb |
| Date Analyzed: | 11/02/18 | Data File: | 110208.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.12 lc | 0.023 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 116 | 70-130 |
| Propene | ppbv | 5 | 104 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 103 | 70-130 |
| Chloromethane | ppbv | 5 | 119 | 70-130 |
| F-114 | ppbv | 5 | 111 | 70-130 |
| Isobutene | ppbv | 5 | 120 | 70-130 |
| Acetaldehyde | ppbv | 5 | 126 | 70-130 |
| Vinyl chloride | ppbv | 5 | 115 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 127 | 70-130 |
| Bromomethane | ppbv | 5 | 107 | 70-130 |
| Chloroethane | ppbv | 5 | 112 | 70-130 |
| Ethanol | ppbv | 5 | 115 | 70-130 |
| Acetonitrile | ppbv | 5 | 122 | 70-130 |
| Acrolein | ppbv | 5 | 110 | 70-130 |
| Acrylonitrile | ppbv | 5 | 112 | 70-130 |
| Pentane | ppbv | 5 | 119 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 101 | 70-130 |
| Acetone | ppbv | 5 | 109 | 70-130 |
| 2-Propanol | ppbv | 5 | 113 | 70-130 |
| Isoprene | ppbv | 5 | 105 | 70-130 |
| Iodomethane | ppbv | 5 | 95 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 99 | 70-130 |
| Methacrolein | ppbv | 5 | 107 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 99 | 70-130 |
| Cyclopentane | ppbv | 5 | 120 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 118 | 70-130 |
| Butanal | ppbv | 5 | 101 | 70-130 |
| Methylene chloride | ppbv | 5 | 90 | 70-130 |
| CFC-113 | ppbv | 5 | 99 | 70-130 |
| Carbon disulfide | ppbv | 5 | 97 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 105 | 70-130 |
| Vinyl acetate | ppbv | 5 | 109 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 108 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 95 | 70-130 |
| Hexane | ppbv | 5 | 112 | 70-130 |
| Chloroform | ppbv | 5 | 107 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 108 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 107 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 105 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| 1-Butanol | ppbv | 5 | 104 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 96 | 70-130 |
| Benzene | ppbv | 5 | 106 | 70-130 |
| Cyclohexane | ppbv | 5 | 104 | 70-130 |
| 2-Pentanone | ppbv | 5 | 110 | 70-130 |
| 3-Pentanone | ppbv | 5 | 115 | 70-130 |
| Pentanal | ppbv | 5 | 96 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 102 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 98 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 103 | 70-130 |
| Trichloroethene | ppbv | 5 | 93 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 86 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 93 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 95 | 70-130 |
| Toluene | ppbv | 5 | 89 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 97 | 70-130 |
| 3-Hexanone | ppbv | 5 | 93 | 70-130 |
| 2-Hexanone | ppbv | 5 | 109 | 70-130 |
| Hexanal | ppbv | 5 | 101 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 89 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 106 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 102 | 70-130 |
| Chlorobenzene | ppbv | 5 | 102 | 70-130 |
| Ethylbenzene | ppbv | 5 | 101 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 120 | 70-130 |
| m,p-Xylene | ppbv | 10 | 109 | 70-130 |
| o-Xylene | ppbv | 5 | 116 | 70-130 |
| Styrene | ppbv | 5 | 101 | 70-130 |
| Bromoform | ppbv | 5 | 104 | 70-130 |
| Benzyl chloride | ppbv | 5 | 126 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 100 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 98 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 108 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 117 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 5 | 105 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 112 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 91 | 70-130 |
| Naphthalene | ppbv | 5 | 96 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 100 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 112 | 70-130 |
| Propene | ppbv | 5 | 103 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 94 | 70-130 |
| Chloromethane | ppbv | 5 | 112 | 70-130 |
| F-114 | ppbv | 5 | 107 | 70-130 |
| Isobutene | ppbv | 5 | 115 | 70-130 |
| Acetaldehyde | ppbv | 5 | 123 | 70-130 |
| Vinyl chloride | ppbv | 5 | 111 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 122 | 70-130 |
| Bromomethane | ppbv | 5 | 105 | 70-130 |
| Chloroethane | ppbv | 5 | 108 | 70-130 |
| Ethanol | ppbv | 5 | 98 | 70-130 |
| Acetonitrile | ppbv | 5 | 114 | 70-130 |
| Acrolein | ppbv | 5 | 115 | 70-130 |
| Acrylonitrile | ppbv | 5 | 110 | 70-130 |
| Pentane | ppbv | 5 | 115 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 93 | 70-130 |
| Acetone | ppbv | 5 | 99 | 70-130 |
| 2-Propanol | ppbv | 5 | 107 | 70-130 |
| Isoprene | ppbv | 5 | 101 | 70-130 |
| Iodomethane | ppbv | 5 | 84 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 92 | 70-130 |
| Methacrolein | ppbv | 5 | 102 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 93 | 70-130 |
| Cyclopentane | ppbv | 5 | 121 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 113 | 70-130 |
| Butanal | ppbv | 5 | 94 | 70-130 |
| Methylene chloride | ppbv | 5 | 72 | 70-130 |
| CFC-113 | ppbv | 5 | 92 | 70-130 |
| Carbon disulfide | ppbv | 5 | 91 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 96 | 70-130 |
| Vinyl acetate | ppbv | 5 | 107 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 103 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 89 | 70-130 |
| Hexane | ppbv | 5 | 105 | 70-130 |
| Chloroform | ppbv | 5 | 99 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 98 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 99 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 97 | 70-130 |
| 1-Butanol | ppbv | 5 | 95 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 91 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ppbv | 5 | 99 | 70-130 |
| Cyclohexane | ppbv | 5 | 101 | 70-130 |
| 2-Pentanone | ppbv | 5 | 111 | 70-130 |
| 3-Pentanone | ppbv | 5 | 111 | 70-130 |
| Pentanal | ppbv | 5 | 104 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 102 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 93 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 101 | 70-130 |
| Trichloroethene | ppbv | 5 | 91 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 87 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 88 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 92 | 70-130 |
| Toluene | ppbv | 5 | 86 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 95 | 70-130 |
| 3-Hexanone | ppbv | 5 | 94 | 70-130 |
| 2-Hexanone | ppbv | 5 | 106 | 70-130 |
| Hexanal | ppbv | 5 | 98 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 84 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 101 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 98 | 70-130 |
| Chlorobenzene | ppbv | 5 | 93 | 70-130 |
| Ethylbenzene | ppbv | 5 | 94 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 114 | 70-130 |
| m,p-Xylene | ppbv | 10 | 101 | 70-130 |
| o-Xylene | ppbv | 5 | 108 | 70-130 |
| Styrene | ppbv | 5 | 95 | 70-130 |
| Bromoform | ppbv | 5 | 95 | 70-130 |
| Benzyl chloride | ppbv | 5 | 117 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 92 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 91 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 99 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 107 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 5 | 98 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 102 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 81 | 70-130 |
| Naphthalene | ppbv | 5 | 89 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 90 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18


Report To Tom Colligan

Company Floyd Snider

Address 601 Union St., Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 Email tom.colligan@floydsnider.com


SAMPLERS (*signature*): Kara, Gabe

PROJECT NAME: Taylor Way-Ave 55

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan



TURNAROUND TIME: ☑ Standard ☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-2-102418 | 01 | 3311 | 242 | 10/24/18 | 29 | 7:59 | 4.5 | 8:05 | X | X | X | | |
| VP-4-102418 | 02 | 3257 | 257 | | 28 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-1-102418 DUP | 03 | 3390 | 256 | | 27.5 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-3-102418 | 04 | 3483 | 258 | | 28.5 | 9:03 | 4.5 | 9:08 | X | X | X | | |
| VP-5-102418 | 05 | 3255 | 240 | | 29.5 | 9:51 | 4.5 | 9:57 | X | X | X | | |
| VP-8-102418 | 06 | 3676 | 241 | | 29.5 | 10:41 | 4.5 | 10:46 | X | X | X | | |
| VP-11-102418 | 07 | 2436 | 230 | | 29.5 | 11:27 | 4.5 | 11:33 | X | X | X | | Samples received at 21 °C |
| VP-9-102418 | 08 | 3347 | 244 | ↓ | 29 | 12:02 | 4.5 | 12:07 | X | X | X | | |


*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: | Kara Hitchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Chan | F-B | 10/24/18 | 3:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 2 of 2

Report To Tom Colligan
Company Floyd|Snider
Address 601 Union St. Ste. 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email

SAMPLERS (signature)

PROJECT NAME: Ave 55 - Taylor Way
PO #:

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO:

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-102418 | 09 | ~~736~~ 3668 | 101 | 10/24/18 | 30 | 0909 | 4.5 | 0913 | X | X | X | | |
| VP-6-102418 | 10 | 2299 | 204 | | 28.5 | 0937 | 4.5 | 0942 | X | X | X | | |
| VP-7-102418 | 11 | 3344 | 224 | | 30 | 1002 | 4.5 | 1008 | X | X | X | | |
| VP-12-102418 | 12 | 3672 | 243 | | 29.5 | ~~1035~~ 1030 | 4.5 | 1035 | X | X | X | | |
| VP-13-102418 | 13 | 3387 | 203 | | 30 | ~~1048~~ 1048 | 4.5 | 1054 | X | X | X | | |
| VP-14-102418 | 14 | 3260 | 221 | | 30 | 1121 | 4.5 | 1127 | X | X | X | | Samples received at 21 °C |
| VP-10-102418 | 15 | 2433 | 17 | ↓ | 29 | 1155 | 4.0 | 1201 | X | X | X | | |
| VP-LB-102418 | 16 | 2434 | 111 | 1 | 30 | 1121 | 0.0 | 1122 | X | X | X | | Archive |


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


FORMS\COC\COCTO-15.DOC

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Karen Hotchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Ho | F&B | 10/24/18 | 13:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 16, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the additional results from the testing of material submitted on October 24, 2018 from the Taylor Way-Ave 55, F&BI 810462 project. There are 20 pages included in this report.

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: Gabe Cisneros
FDS1116R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 24, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor Way-Ave 55, F&BI 810462 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 810462 -01 | VP-2-102418 |
| 810462 -02 | VP-1-102418 |
| 810462 -03 | VP-1-102418 Dup |
| 810462 -04 | VP-3-102418 |
| 810462 -05 | VP-5-102418 |
| 810462 -06 | VP-8-102418 |
| 810462 -07 | VP-11-102418 |
| 810462 -08 | VP-9-102418 |
| 810462 -09 | VP-4-102418 |
| 810462 -10 | VP-6-102418 |
| 810462 -11 | VP-7-102418 |
| 810462 -12 | VP-12-102418 |
| 810462 -13 | VP-13-102418 |
| 810462 -14 | VP-14-102418 |
| 810462 -15 | VP-10-102418 |
| 810462 -16 | VP-LB-102418 |

An opening APH calibration standard was not analyzed on 10/26/18. The data were qualified accordingly. A full list TO15 calibration standard was analyzed and was within acceptance limits.

The APH EC5-8 aliphatics concentration for sample VP-6-102418 exceeded the calibration range. The data were flagged accordingly.

Non-petroleum compounds with Q values over 85 were subtracted from the APH EC5-8 and EC9-12 aliphatics ranges, if present.

All other quality control requirements were acceptable.

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-01 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102608.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,200 ca |
| APH EC9-12 aliphatics | 340 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-02 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 95 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,600 |
| APH EC9-12 aliphatics | 2,000 |
| APH EC9-10 aromatics | 170 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 Dup | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-03 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110912.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 95 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,200 |
| APH EC9-12 aliphatics | 1,700 |
| APH EC9-10 aromatics | 160 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-04 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102611.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 89 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 790 |
| APH EC9-12 aliphatics | 370 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-05 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102612.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 89 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 750 ca |
| APH EC9-12 aliphatics | 370 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-06 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110913.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 82 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,000 |
| APH EC9-12 aliphatics | 330 |
| APH EC9-10 aromatics | <120 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-07 1/3.3 |
| Date Analyzed: | 11/09/18 | Data File: | 110914.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 87 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,200 |
| APH EC9-12 aliphatics | 790 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-08 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102615.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 690 ca |
| APH EC9-12 aliphatics | 200 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-09 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102616.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 480 ca |
| APH EC9-12 aliphatics | 140 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-10 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102617.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 4,700 ve ca |
| APH EC9-12 aliphatics | 580 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-11 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102618.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,800 ca |
| APH EC9-12 aliphatics | 340 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-12 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102619.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 740 ca |
| APH EC9-12 aliphatics | 250 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-13 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102620.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 770 ca |
| APH EC9-12 aliphatics | 180 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-14 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102621.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 710 ca |
| APH EC9-12 aliphatics | 390 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-15 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102622.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 470 ca |
| APH EC9-12 aliphatics | 320 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-LB-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-16 1/10 |
| Date Analyzed: | 11/03/18 | Data File: | 110226.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 470 |
| APH EC9-12 aliphatics | <350 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2484 mb |
| Date Analyzed: | 11/09/18 | Data File: | 110907.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 79 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

Date of Report: 11/16/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 45 | 112 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 45 | 129 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 45 | 107 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 1 of 2

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St., Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Taylor Way - Ave 55

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | APH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-2-102418 | 01 | 3311 | 242 | 10/24/18 | 29 | 7:59 | 4.5 | 8:05 | X | X | X | (X) | (X) - per GC 11/8/18 MC |
| VP-4-102418 | 02 | 3257 | 252 | | 28 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-1-102418 DUP | 03 | 3390 | 256 | | 27.5 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-3-102418 | 04 | 3483 | 258 | | 28.5 | 9:03 | 4.5 | 9:18 | X | X | X | | |
| VP-5-102418 | 05 | 3255 | 240 | | 29.5 | 9:51 | 4.5 | 9:57 | X | X | X | | |
| VP-8-102418 | 06 | 3676 | 241 | | 29.5 | 10:41 | 4.5 | 10:46 | X | X | X | | |
| VP-11-102418 | 07 | 2436 | 230 | | 29.5 | 11:27 | 4.5 | 11:33 | X | X | X | | Samples received at 21 °C |
| VP-9-102418 | 08 | 3347 | 244 | ↓ | 29 | 12:02 | 4.5 | 12:07 | X | X | X | ↓ | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kara Hitchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Clark | F-B | 10/24/18 | 3:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 2 of 2

Report To Tom Callisa
Company Floyd|Snider
Address 601 Union St. Ste. 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email

SAMPLERS (signature)

PROJECT NAME: Ave 55 - Taylor Way

PO #

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | APH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-102418 | 09 | ~~3668~~ 3608 | 101 | 10/24/18 | 30 | 0909 | 4.5 | 0913 | X | X | X | (X) | |
| VP-6-102418 | 10 | 2299 | 204 | | 28.5 | 0937 | 4.5 | 0942 | X | X | X | | |
| VP-7-102418 | 11 | 3344 | 224 | | 30 | 1002 | 4.5 | 1008 | X | X | X | | |
| VP-12-102418 | 12 | 3672 | 243 | | 29.5 | ~~1025~~ 1030 | 4.5 | 1035 | X | X | X | | |
| VP-13-102418 | 13 | 3387 | 203 | | 30 | ~~1048~~ 1048 | 4.5 | 1054 | X | X | X | | |
| VP-14-102418 | 14 | 3260 | 221 | | 30 | 1121 | 4.5 | 1127 | X | X | X | | Samples received at 2° C |
| VP-10-102418 | 15 | 2433 | 17 | ↓ | 29 | 1155 | 4.0 | 1201 | X | X | X | | |
| VP-LB-102418 | 16 | 2434 | 111 | 1 | 30 | 1121 | 0.0 | 1122 | X | X | X | ↓ | Archive |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Koren Hotchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Cha | F-S | 10/24/18 | 1316 |
| Relinquished by: | | | | |
| Received by: | | | | |

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**Attachment 6**
**Johnson and Ettinger Model Inputs and Results**

**Building A**

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building A
Report Date: Mon Nov 26 2018 06:24:19 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 420[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: 1,2,4-Trimethylbenzene CAS Number: 95636
Molecular Weight: 120.2 [g/mole] Henrys Constant: 0.1315008 [unitless]
Diffusivity in Air: 6.060e-2 [$cm^2$/sec] Diffusivity in Water: 7.920e-6 [$cm^2$/sec]
Unit Risk Factor: 0 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.00595 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 150000[$m^2$]
Subsurface Foundation Area: 150060[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.006118[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000002089

[1]Low Indoor Air Prediction: 4.210e-4 [µg/$m^3$] or 8.568e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 7.075e-5

Best Estimate Indoor Air Prediction: 8.775e-4[µg/$m^3$] or 1.786e-4 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 1.475e-4

[2]High Indoor Air Prediction: 0.001631[µg/$m^3$] or 3.320e-4 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 2.741e-4

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building A
Report Date: Mon Nov 26 2018 07:16:55 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 47[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: 1,3-Butadiene CAS Number: 106990
Molecular Weight: 54.09 [g/mole] Henrys Constant: 2.300116 [unitless]
Diffusivity in Air: 0.2490 [$cm^2$/sec] Diffusivity in Water: 1.080e-5 [$cm^2$/sec]
Unit Risk Factor: 0.00028 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 150000[$m^2$]
Subsurface Foundation Area: 150060[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.02514[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000007861

[1]Low Indoor Air Prediction: 1.572e-4 [µg/$m^3$] or 7.110e-5 [ppbv]
Cancer Risk of this concentration: 1.809e-8 Hazard Risk of this concentration: 0.

Best Estimate Indoor Air Prediction: 3.695e-4[µg/$m^3$] or 1.671e-4 [ppbv]
Cancer Risk of this concentration: 4.252e-8 Hazard Risk of this concentration: 0.

[2]High Indoor Air Prediction: 7.167e-4[µg/$m^3$] or 3.242e-4 [ppbv]
Cancer Risk of this concentration: 8.247e-8 Hazard Risk of this concentration: 0.

Based on parameter analysis: Diffusion is the dominant mechanism across foundation. Diffusion through foundation is the overall rate-limiting process for the subsurface to indoor-air pathway.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building A
Report Date: Mon Nov 26 2018 07:31:04 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 9.2[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Acrolein CAS Number: 107028
Molecular Weight: 56.1 [g/mole] Henrys Constant: 0.003375252 [unitless]
Diffusivity in Air: 0.1050 [$cm^2$/sec] Diffusivity in Water: 1.220e-5 [$cm^2$/sec]
Unit Risk Factor: 0 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.00002 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 150000[$m^2$]
Subsurface Foundation Area: 150060[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.01061[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000003451

[1]Low Indoor Air Prediction: 1.443e-5 [µg/$m^3$] or 6.294e-6 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 7.216e-4

Best Estimate Indoor Air Prediction: 3.175e-5[µg/$m^3$] or 1.385e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.001588

[2]High Indoor Air Prediction: 6.036e-5[µg/$m^3$] or 2.632e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.003018

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building A
Report Date: Mon Nov 26 2018 07:33:01 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 25[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Acrylonitrile CAS Number: 107131
Molecular Weight: 53.06 [g/mole] Henrys Constant: 0.002598185 [unitless]
Diffusivity in Air: 0.1220 [$cm^2$/sec] Diffusivity in Water: 1.340e-5 [$cm^2$/sec]
Unit Risk Factor: 0.000068 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.002 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 150000[$m^2$]
Subsurface Foundation Area: 150060[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.01233[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000003974

[1]Low Indoor Air Prediction: 4.471e-5 [µg/$m^3$] or 2.062e-5 [ppbv]
Cancer Risk of this concentration: 1.249e-9 Hazard Risk of this concentration: 2.235e-5

Best Estimate Indoor Air Prediction: 9.934e-5[µg/$m^3$] or 4.581e-5 [ppbv]
Cancer Risk of this concentration: 2.776e-9 Hazard Risk of this concentration: 4.967e-5

[2]High Indoor Air Prediction: 1.897e-4[µg/$m^3$] or 8.745e-5 [ppbv]
Cancer Risk of this concentration: 5.300e-9 Hazard Risk of this concentration: 9.483e-5

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building A
Report Date: Mon Nov 26 2018 07:34:04 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 33[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Naphthalene CAS Number: 91203
Molecular Weight: 128.18 [g/mole] Henrys Constant: 0.009593771 [unitless]
Diffusivity in Air: 5.900e-2 [$cm^2$/sec] Diffusivity in Water: 7.500e-6 [$cm^2$/sec]
Unit Risk Factor: 0 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.003 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 150000[$m^2$]
Subsurface Foundation Area: 150060[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.005959[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000002041

[1]Low Indoor Air Prediction: 3.256e-5 [µg/$m^3$] or 6.215e-6 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 1.085e-5

Best Estimate Indoor Air Prediction: 6.736e-5[µg/$m^3$] or 1.286e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 2.245e-5

[2]High Indoor Air Prediction: 1.250e-4[µg/$m^3$] or 2.385e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 4.166e-5

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

**Building B**

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building B
Report Date: Mon Nov 26 2018 07:14:34 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 320[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Acetaldehyde CAS Number: 75070
Molecular Weight: 44.05 [g/mole] Henrys Constant: 0.002312649 [unitless]
Diffusivity in Air: 0.1240 [$cm^2$/sec] Diffusivity in Water: 1.410e-5 [$cm^2$/sec]
Unit Risk Factor: 0.0000022 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.009 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 51900[$m^2$]
Subsurface Foundation Area: 52000[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.01254[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000004492

[1]Low Indoor Air Prediction: 7.407e-4 [µg/$m^3$] or 4.114e-4 [ppbv]
Cancer Risk of this concentration: 6.697e-10 Hazard Risk of this concentration: 8.230e-5

Best Estimate Indoor Air Prediction: 0.001438[µg/$m^3$] or 7.984e-4 [ppbv]
Cancer Risk of this concentration: 1.300e-9 Hazard Risk of this concentration: 1.597e-4

[2]High Indoor Air Prediction: 0.002609[µg/$m^3$] or 0.001449 [ppbv]
Cancer Risk of this concentration: 2.359e-9 Hazard Risk of this concentration: 2.899e-4

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building B
Report Date: Mon Nov 26 2018 06:51:45 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 3.9[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Acrolein CAS Number: 107028
Molecular Weight: 56.1 [g/mole] Henrys Constant: 0.003375252 [unitless]
Diffusivity in Air: 0.1050 [$cm^2$/sec] Diffusivity in Water: 1.220e-5 [$cm^2$/sec]
Unit Risk Factor: 0 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.00002 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 51900[$m^2$]
Subsurface Foundation Area: 52000[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.01061[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000003912

[1]Low Indoor Air Prediction: 8.106e-6 [µg/$m^3$] or 3.535e-6 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 4.053e-4

Best Estimate Indoor Air Prediction: 1.526e-5[µg/$m^3$] or 6.654e-6 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 7.629e-4

[2]High Indoor Air Prediction: 2.733e-5[µg/$m^3$] or 1.192e-5 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.001367

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building B
Report Date: Mon Nov 26 2018 07:00:49 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 16[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Acrylonitrile CAS Number: 107131
Molecular Weight: 53.06 [g/mole] Henrys Constant: 0.002598185 [unitless]
Diffusivity in Air: 0.1220 [$cm^2$/sec] Diffusivity in Water: 1.340e-5 [$cm^2$/sec]
Unit Risk Factor: 0.000068 [$(µg/m^3)^{-1}$] Reference Concentration: 0.002 [$mg/m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 51900[$m^2$]
Subsurface Foundation Area: 52000[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.01233[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.00000443

[1]Low Indoor Air Prediction: 3.658e-5 [µg/$m^3$] or 1.687e-5 [ppbv]
Cancer Risk of this concentration: 1.022e-9 Hazard Risk of this concentration: 1.829e-5

Best Estimate Indoor Air Prediction: 7.089e-5[µg/$m^3$] or 3.269e-5 [ppbv]
Cancer Risk of this concentration: 1.981e-9 Hazard Risk of this concentration: 3.544e-5

[2]High Indoor Air Prediction: 1.285e-4[µg/$m^3$] or 5.927e-5 [ppbv]
Cancer Risk of this concentration: 3.592e-9 Hazard Risk of this concentration: 6.427e-5

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

# INDOOR AIR SIMULATION RESULTS

## Screening-Level Johnson and Ettinger Model

Site Name: Ave 55 - Taylor Way Building B
Report Date: Mon Nov 26 2018 07:07:57 GMT-0800 (Pacific Standard Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: SOIL GAS Concentration = 94[µg/$m^3$]
Depth of soil gas sample: 0.85ft +/- 0ft
Average soil/ground water temperature: 15C

**CHEMICAL PROPERTIES**
Chemical of Concern: Trichloroethylene CAS Number: 79016
Molecular Weight: 131.39 [g/mole] Henrys Constant: 0.2642082 [unitless]
Diffusivity in Air: 7.900e-2 [$cm^2$/sec] Diffusivity in Water: 9.100e-6 [$cm^2$/sec]
Unit Risk Factor: 0.00011 [(µg/$m^3$)$^{-1}$] Reference Concentration: 0.04 [mg/$m^3$]

**SOIL PROPERTIES**
Soil Type: Sandy Loam Total Porosity: 0.387
Unsaturated Zone Moisture Content:
low= 0.039 best estimate= 0.103 high= 0.17
Capillary Zone Moisture Content: 0.32 Height of Capillary Rise: 0.25 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

**BUILDING PROPERTIES**
Building Type: Slab-on-Grade Air Exchange Rate: 0.45[$hr^{-1}$]
Building Mixing Height: 10[m] Building Footprint Area: 51900[$m^2$]
Subsurface Foundation Area: 52000[$m^2$] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

**EXPOSURE PARAMETERS**
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

**JOHNSON & ETTINGER SIMULATION RESULTS**
Effective Diffusion Coefficient ($D_{eff}$): 0.007976[$cm^2$/s]
Soil Gas to Indoor Air Attenuation Factor ($\alpha_{SG}$) = 0.000003124

[1]Low Indoor Air Prediction: 1.660e-4 [µg/$m^3$] or 3.091e-5 [ppbv]
Cancer Risk of this concentration: 7.504e-9 Hazard Risk of this concentration: 4.150e-6

Best Estimate Indoor Air Prediction: 2.936e-4[µg/$m^3$] or 5.468e-5 [ppbv]
Cancer Risk of this concentration: 1.327e-8 Hazard Risk of this concentration: 7.341e-6

[2]High Indoor Air Prediction: 5.118e-4[µg/$m^3$] or 9.529e-5 [ppbv]
Cancer Risk of this concentration: 2.313e-8 Hazard Risk of this concentration: 1.279e-5

Based on parameter analysis:

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Building Mixing Height is outside the recommended range for this building type.
Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

Please print, sign and return to the Department of Ecology

# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: R066666

Consulting Firm _____

Unique Ecology Well IDTag No. AKL280 (PPIB)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

_____

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

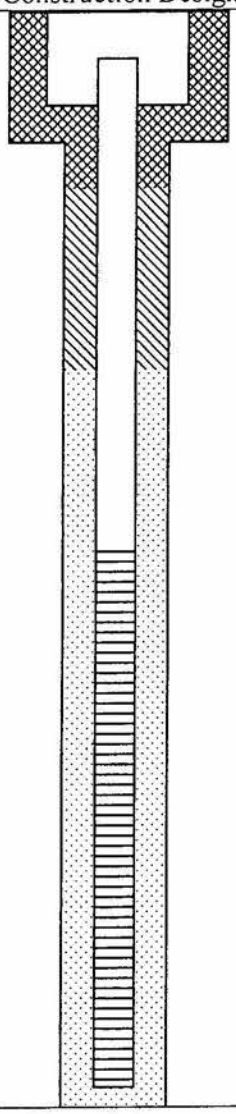
Tax Parcel No. 0321267005

Cased or Uncased Diameter 3/4" Static Level ____

Work/Decommission Start Date 7/28/17

Work/Decommission Completed Date 7/28/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK: _____

SCREEN: _____

WELL DEPTH: 16'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

RECEIVED

AUG 28 2017

WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 14 OF 14

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: R066666

Consulting Firm _____

Unique Ecology Well IDTag No. AKL282 (PP213)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

_____

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW 1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

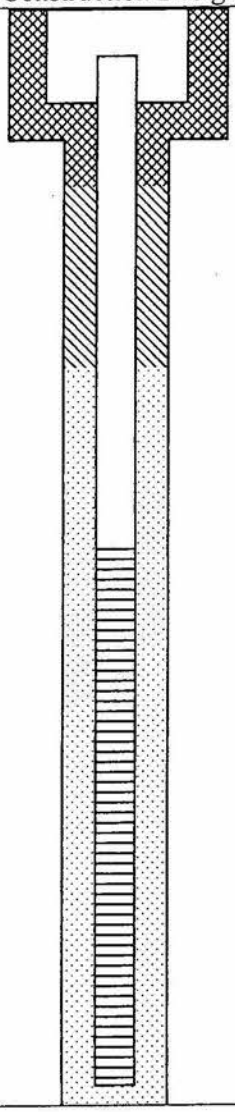
Long Deg _____ Min _____ Sec _____

Tax Parcel No. 0321267005

Cased or Uncased Diameter 3/4" Static Level _____

Work/Decommission Start Date 7/28/17

Work/Decommission Completed Date 7/28/17

| Construction Design | Well Data | Formation Description |
|---|---|---|
|  | MONUMENT TYPE: stand-up<br>REMOVED MONUMENT: YES/NO<br>PVC BLANK: _____<br>SCREEN: _____<br>WELL DEPTH: 17' | FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED<br>REMOVED MONUMENT: YES / NO<br>☒ WELL WAS CHIPPED/GROUTED IN PLACE<br>☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP<br>Monuments will be removed when area gets excavated |

RECEIVED

AUG 28 2017

WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 12 OF 14

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AXL 283 (PP2A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

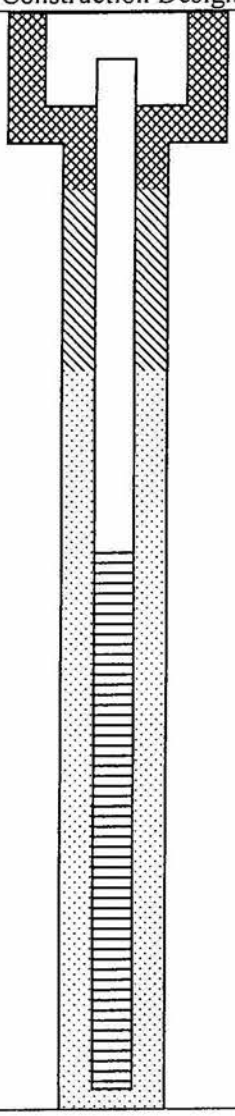
Long Deg ____ Min ____ Sec ____

Tax Parcel No. 0321267005

Cased or Uncased Diameter 3/4" Static Level ____

Work/Decommission Start Date 7/28/17

Work/Decommission Completed Date 7/28/17

| Construction Design | Well Data | Formation Description |
|---|---|---|
|  | MONUMENT TYPE: stand-up<br>REMOVED MONUMENT: YES / NO<br>PVC BLANK:<br>SCREEN:<br>WELL DEPTH: 8' | FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED<br>REMOVED MONUMENT: YES / NO<br>☑ WELL WAS CHIPPED/GROUTED IN PLACE<br>☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP<br>Monuments will be removed when area gets excavated |

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 11 OF 14

Please print, sign and return to the Department of Ecology

# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL 284 (PMW2B)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

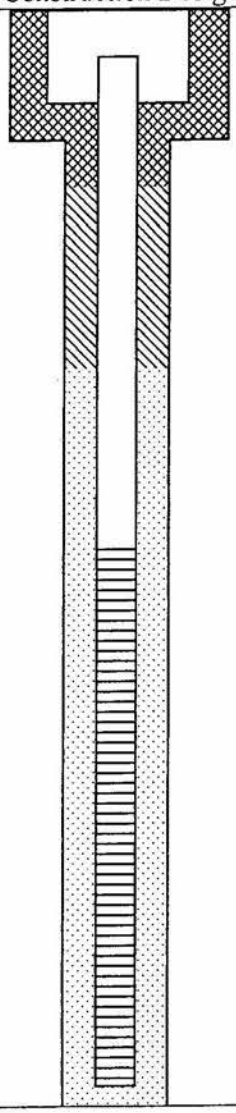
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK:

SCREEN:

WELL DEPTH: 17'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

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SCALE: 1"= ____ PAGE 8 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AXL 288 (PMW 3B)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

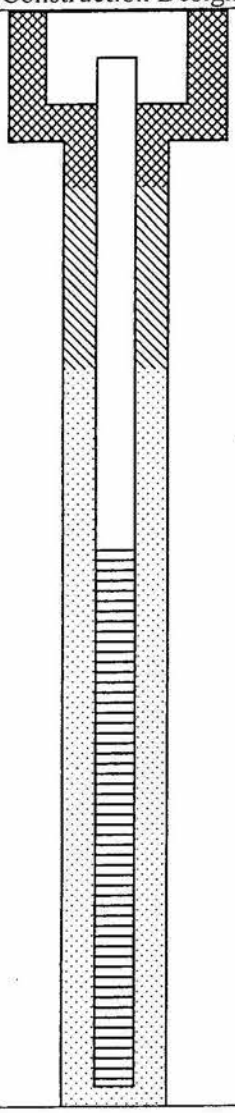
Long Deg ____ Min ____ Sec ____

Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

| Construction Design | Well Data | Formation Description |
|---|---|---|
|  | MONUMENT TYPE: stand-up<br>REMOVED MONUMENT: YES / NO<br>PVC BLANK:<br>SCREEN:<br>WELL DEPTH: 18' | FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED<br>REMOVED MONUMENT: YES / NO<br>☒ WELL WAS CHIPPED/GROUTED IN PLACE<br>☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP<br>Monuments will be removed when area gets excavated |

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SCALE: 1"= ____ PAGE 6 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL 281 (PPIA)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW 1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

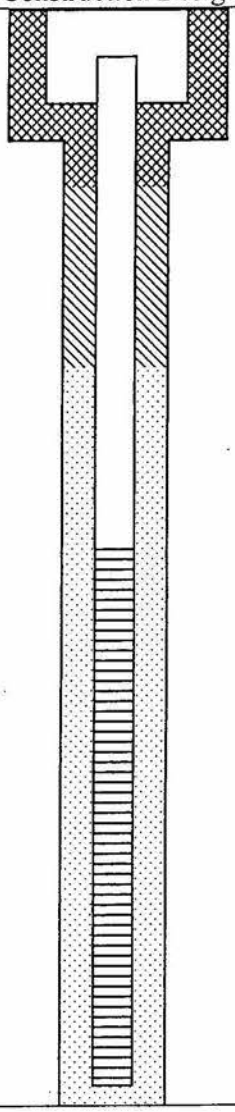
Long Deg ____ Min ____ Sec ____

Tax Parcel No. 0321267005

Cased or Uncased Diameter 3/4" Static Level ____

Work/Decommission Start Date 7/28/17

Work/Decommission Completed Date 7/28/17

| Construction Design | Well Data | Formation Description |
|---|---|---|
|  | MONUMENT TYPE: stand-up<br>REMOVED MONUMENT: YES / NO<br>PVC BLANK:<br>SCREEN:<br>WELL DEPTH: 7' | FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED<br>REMOVED MONUMENT: YES / NO<br>☒ WELL WAS CHIPPED/GROUTED IN PLACE<br>☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP<br>Monuments will be removed when area gets excavated |

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SCALE: 1"= ____ PAGE 13 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL292 (PMW4B)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

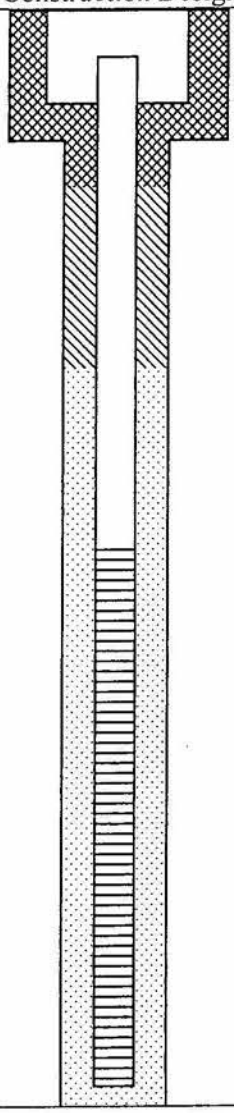
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK:

SCREEN:

WELL DEPTH: 30'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 10 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm _____

Unique Ecology Well IDTag No. AKL 285 (PMW2A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

_____

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

Long Deg _____ Min _____ Sec _____

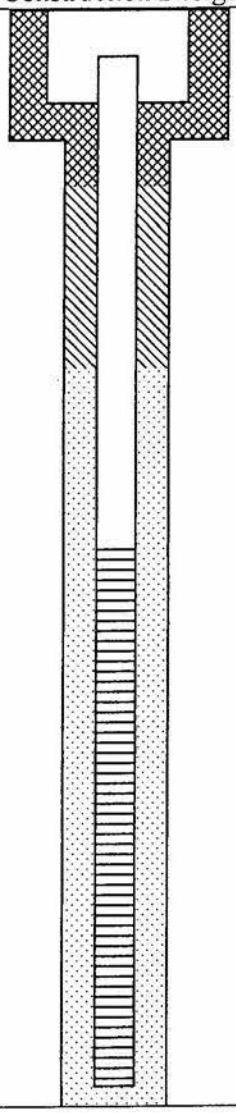
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK: _____

SCREEN: _____

WELL DEPTH: 7'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

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**WA State Department of Ecology (SWRO)**

SCALE: 1"= ____ PAGE 7 OF 14

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL 293 (PMW 4A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW 1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

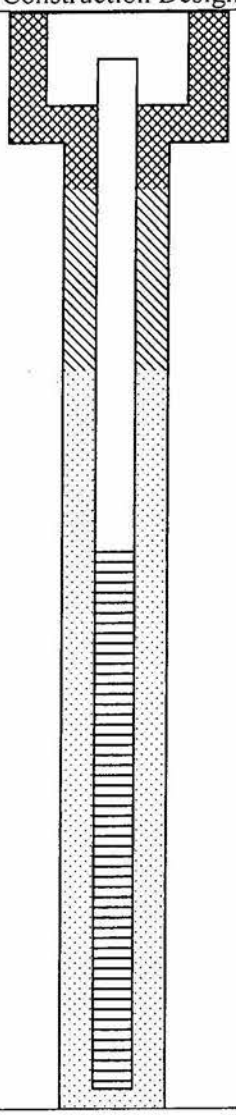
Long Deg ____ Min ____ Sec ____

Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/14

| Construction Design | Well Data | Formation Description |
|---|---|---|
|  | MONUMENT TYPE: stand-up<br>REMOVED MONUMENT: YES / NO<br>PVC BLANK:<br>SCREEN:<br>WELL DEPTH: 17' | FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED<br>REMOVED MONUMENT: YES / NO<br>☒ WELL WAS CHIPPED/GROUTED IN PLACE<br>☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP<br>Monuments will be removed when area gets excavated |

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 9 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL290 (PMW5B)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

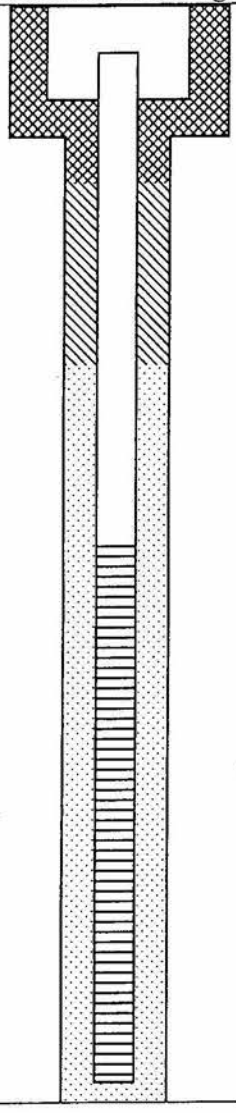
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK:

SCREEN:

WELL DEPTH:

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 4 OF 14

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL 287 (PMW1A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW 1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

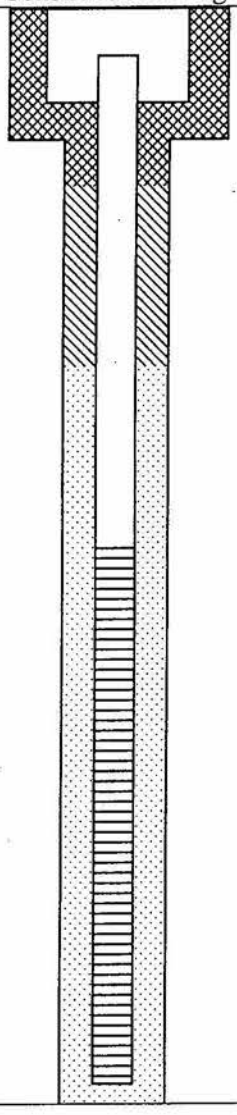
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK:

SCREEN:

WELL DEPTH: 9'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 2 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm _____

Unique Ecology Well IDTag No. AKL 286 (PMWIB)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

_____

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

Long Deg _____ Min _____ Sec _____

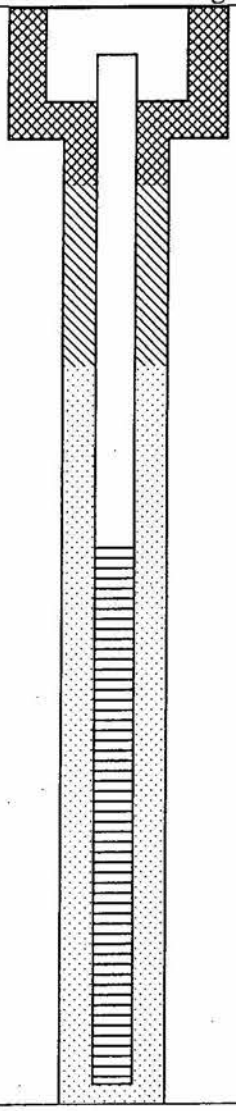
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK: _____

SCREEN: _____

WELL DEPTH: 18'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

RECEIVED

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WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 1 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm

Unique Ecology Well IDTag No. AKL 289 (PMW3A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

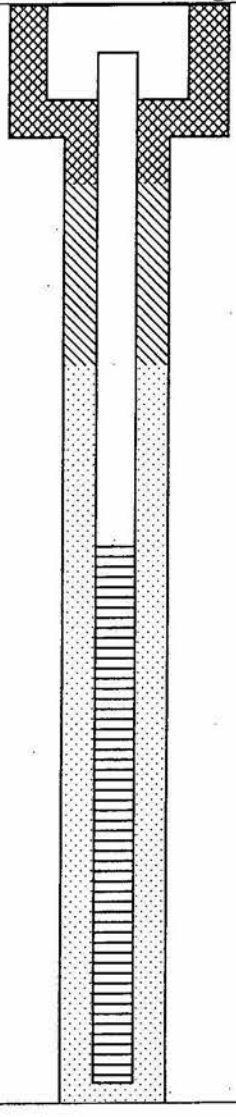
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level ____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK:

SCREEN:

WELL DEPTH: 7'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

RECEIVED

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SCALE: 1"= ____ PAGE 5 OF 14

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No.** AE44057

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* R066666

Consulting Firm _____

Unique Ecology Well IDTag No. AKL 291 (PMW5A)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Don Harnden

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2914

**If trainee, licensed driller's Signature and License Number:**

_____

**Type of Well** *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Port of Tacoma

Site Address 1514 Taylor Way

City Tacoma County Pierce

Location SE1/4-1/4 SW 1/4 Sec 26 Twn 21 R 03

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

Long Deg _____ Min _____ Sec _____

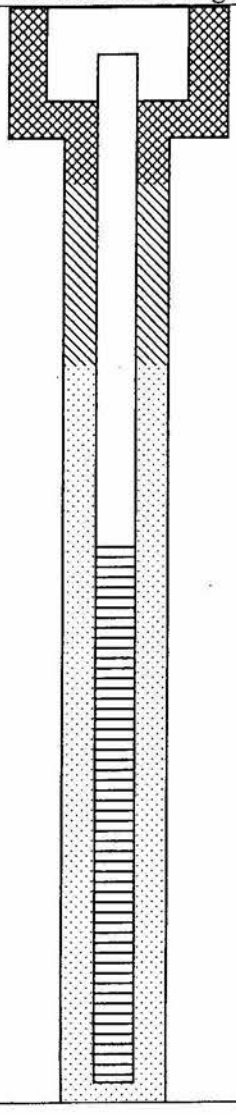
Tax Parcel No. 0321267005

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 7/21/17

Work/Decommission Completed Date 7/21/17

## Construction Design



## Well Data

MONUMENT TYPE: stand-up

REMOVED MONUMENT: YES / NO

PVC BLANK: _____

SCREEN: _____

WELL DEPTH: 10'

## Formation Description

FORMATION NOT OBSERVED – WELL WAS DECOMMISSIONED

REMOVED MONUMENT: YES / NO

☒ WELL WAS CHIPPED/GROUTED IN PLACE

☐ ALL CASING WAS REMOVED AND BACKFILLED BOTTOM UP

Monuments will be removed when area gets excavated

RECEIVED

AUG 28 2017

WA State Department of Ecology (SWRO)

SCALE: 1"= ____ PAGE 3 OF 14

ECY 050-12 (Rev. 7/06)

Ecology is an Equal Opportunity Employer

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

# Field Activities Report

| | | | |
|---|---|---|---|
| **Date:** | 8/16/17 | **Project:** | 1514 Taylor Way |
| **Location:** | 1514 Taylor Way, Tacoma WA | | |
| **Project Activity:** | Environmental meeting | **Project Manager:** | T. Colligan |

**Description of site work activities, work locations, equipment used, site conditions, field personnel and visitors, safety and work meetings, and other notable events/occurrences.**

Tom Colligan on site to meet with Steve Teel of Ecology for site visit and to discuss stockpiling and sampling.

Also present on site for meeting- Drew Zaborowski, Avenue 55, and Jason Nix, Sierra, and two employees of the earth work contractor (AJ and other).

Also on site was Malcom Drilling, the contractor doing the deep dynamic compaction.

Surchage pile for Building B has already been constructed of soil existing on site and was being rolled. Settlement markers were being installed.

Prior to today FloydSnider had sampled 4 stockpiles of soil that had been brought in to the site from the Block 25W site in Seattle; as follows:

tockpile 1 and Stockpile 2: Together one larger pile totaling an estimated 550-650 truck cubic yards (22-32 truck loads). Four samples collected across perimeter of this larger pile. Sample IDs: SP-1, SP-1b, SP-2, SP-2b

Stockpile 3: One separate pile approx. 300-400 tcy in size. 2 samples collected. SP-3; SP-3b

Stockpile 4: One separate pile approx. 300-400 tcy in size. 2 samples collected. SP-4, SP-4b

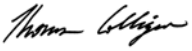
Results were received just prior to the meeting with and everything non-detect. I gave OK to contractor that Stockpiles 1-4 could be moved to be used as fill with no conditions. Forwarded the lab report to Steve Teel.

Stockpile 5: One separate stockpile, approx. 350-400 tcy. This was sampled today, and one sample collected after it was decided with Ecology that one sample would be sufficient for stockpiles that were comprised of 20 truckloads of soil (which is approximately 400 tcy, which is roughly 330 in place bank cubic yards for the light sandy soil that has been imported). Results requested by end of day on 8/18 for CVOCs, cPAH, TPH-Dx, arsenic and lead.

Also discussed were options for discontinuing sampling of stockpiles and instead sample the building pad and surcharge after it was constructed. This could reduce need for quick turnaround. Ecology said that is a possibility if we prepare a work plan for their review and approval using Multi-incremental sampling (MIS) of that pile.

**Action Items:**

**FS to prepare work plan for MIS sampling of Building A surcharge pile if we desire to lessen the testing required.**

**F|S Personnel (sign):**  **Print: Tom Colligan** **Date: 8/18/17**

**Attachments (list here):None**

Fill Import Tracking Sheet

Project Location: 1514 Taylor Way, Tacoma WA
Prepared by TOM COLLIGAN, Floyd|Snider
Client: Avenue 55

| Date Sampled | Quantity (truckloads) | Approx Bank Cubic Yards | Origin | Address | Stockpile ID | Date Submitted to Laboratory | Laboratory Report | Results (CVOCs, cPAH, TPH-Dx, Arsenic, Lead) |
|---|---|---|---|---|---|---|---|---|
| 8/9/2017 | 15 | 242 | Block 25 | 630 Boren Avenue North and 609 Faireview Avenue North | SP-1, Sp-1B | 8/14/2017 | Fbi 708260 | Organics All ND, metals < MTCA |
| 8/10/2017 | 16 | 258 | | | Sp-2, Sp-2B | 8/14/2017 | Fbi 708260 | Organics All ND, metals < MTCA |
| 8/11/2017 | 10 | 161 | | | SP-3, Sp-3B | 8/14/2017 | Fbi 708260 | Organics All ND, metals < MTCA |
| 8/14/2017 | 10 | 161 | | | SP-4, SP-4B | 8/14/2017 | Fbi 708260 | Organics All ND, metals < MTCA |
| 8/15/2017 | 18 | 290 | | | SP-5 | 8/16/2017 | Fbi 708316 | Organics All ND, metals < MTCA |
| 8/21/2017 | 20 | 322 | | | SP-6 | 8/22/2017 | Fbi 708403 | Organics All ND, metals < MTCA |
| 8/21/2017 | 20 | 322 | | | SP-7 | 8/22/2017 | Fbi 708403 | Organics All ND, metals < MTCA |
| 8/21/2017 | 20 | 322 | | | SP-8 | 8/22/2017 | Fbi 708403 | Organics All ND, metals < MTCA |
| 8/22/2017 | 20 | 322 | | | SP-9 | 8/23/2017 | Fbi 708432 | Organics All ND, metals < MTCA |
| 8/22/2017 | 20 | 322 | | | SP-10 | 8/23/2017 | Fbi 708432 | Organics All ND, metals < MTCA |
| 8/22/2017 | 20 | 322 | | | SP-11 | 8/23/2017 | Fbi 708432 | Organics All ND, metals < MTCA |
| 8/22/2017 | 20 | 322 | | | SP-12 | 8/23/2017 | Fbi 708432 | Organics All ND, metals < MTCA |
| 8/22/2017 | 20 | 322 | | | SP-13 | 8/23/2017 | Fbi 708432 | Organics All ND, metals < MTCA |
| 8/23/2017 | 20 | 322 | | | SP-14 | 8/24/2017 | Fbi 708495 | Organics All ND, metals < MTCA |
| 8/23/2017 | 20 | 322 | | | SP-15 | 8/24/2017 | Fbi 708495 | Organics All ND, metals < MTCA |
| 8/23/2017 | 20 | 322 | | | SP-16 | 8/24/2017 | Fbi 708495 | Organics All ND, metals < MTCA |
| 8/25/2017 | 20 | 322 | | | SP-17 | 8/28/2017 | Fbi 708495 | cPAH TEQ = 0.05 ppm. TPH and CVOCs ND, metals < MTCA |
| 8/25/2017 | 20 | 322 | | | SP-18 | 8/28/2017 | Fbi 708495 | Organics All ND, metals < MTCA |
| 9/8/2017 | 21 | 338 | Roosevelt | NE 66th and 12 Ave NE | SP-19 | 9/12/2017 | Fbi 709185 | HCID and VOCs all ND |
| 9/8/2017 | 20 | 322 | | | SP-20 | 9/12/2017 | Fbi 709185 | HCID and VOCs all ND |
| 9/8/2017 | 20 | 322 | Block 31 | Adjacent to Block 25; Intersection of Mercer Street and Boren Ave | SP-21 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/8/2017 | 20 | 322 | | | SP-22 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/8/2017 | 20 | 322 | | | SP-23 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/8/2017 | 20 | 322 | | | SP-24 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/8/2017 | 20 | 322 | | | SP-25 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/8/2017 | 20 | 322 | | | SP-26 | 9/12/2017 | Fbi 709186 | cPAH TEQ = 0.26 ppm. TPH and CVOCs ND, metals < MTCA |
| 9/11/2017 | 20 | 322 | | | SP-27 | 9/12/2017 | Fbi 709186 | Organics All ND, metals < MTCA |
| 9/14/2017 | 20 | 322 | | | SP-28 | 9/15/2017 | Fbi 709262 | Organics All ND, metals < MTCA |

Fill Import Tracking Sheet

Project Location: 1514 Taylor Way, Tacoma WA
Prepared by TOM COLLIGAN, Floyd|Snider
Client: Avenue 55

| Date Sampled | Quantity (truckloads) | Approx Bank Cubic Yards | Origin | Address | Stockpile ID | Date Submitted to Laboratory | Laboratory Report | Results (CVOCs, cPAH, TPH-Dx, Arsenic, Lead) |
|---|---|---|---|---|---|---|---|---|
| 9/14/2017 | 20 | 322 | Dexter | 333 Dexter Avenue North | SP-29 | 9/14/2017 | Fbi 709291 | HCID, cPAH All ND, lead < MTCA |
| 9/14/2017 | 20 | 322 | | | SP-30 | 9/14/2017 | Fbi 709291 | HCID, cPAH All ND, lead < MTCA |
| 9/14/2017 | 20 | 322 | | | SP-31 | 9/14/2017 | Fbi 709291 | HCID, cPAH All ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-32 | 9/18/2017 | Fbi 709291 | HCID, cPAH All ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-33 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-34 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-35 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-36 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-37 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-38 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-39 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/18/2017 | 20 | 322 | | | SP-40 | 9/18/2017 | Fbi 709291 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-41 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-42 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-43 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-44 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-45 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| 9/19/2017 | 20 | 322 | | | SP-46 | 9/19/2017 | Fbi 709367 | HCID ND, lead < MTCA |
| TOTAL | 890 | 14,329 | | | | | | |

# Field Activities Report

| | | | |
|---|---|---|---|
| **Date:** | February 15, 2018 | **Project:** | Ave 55-Taylor Way |
| **Location:** | 1514 Taylor Way, Tacoma, WA | | |
| **Project Activity:** | Soil Vapor Survey | **Project Manager:** | Tom Colligan |

**Description of site work activities, work locations, equipment used, site conditions, field personnel and visitors, safety and work meetings, and other notable events/occurrences.**

Vapor sampling was performed on February 15, 2018. The sampling was preceded by 7 days of dry weather, followed by light rain approximately 24 hours prior to sampling. Barometric pressure was stable and the weather was dry on the day of sampling. Drilling was performed by ESN with oversight by Floyd|Snider.

Site conditions were muddy and maneuvering was difficult. However, standing water was present only in the designated stormwater pond. It is likely that survey locations in the main drive aisle (i.e. not on building pads) will not be under standing water and will be accessible for sampling (with minimal relocation) after similar dry weather stretches in the future.

Sampling was focused on building B, where surcharge loading has been completed and a building permit is forthcoming. Additional samples were collected in accessible areas of the building A pad where surcharge piles had already been removed (refer to attached field figure). At all locations, the depth to groundwater was measured by probing with closed point rods to 10 feet bgs and measuring the water level in the resulting borehole. Sample points were set 6 inches to 1 foot above the water table.

The building B pad height was approximately 5 feet above the surrounding ground surface. Groundwater was encountered between 4 and 4.5 feet bgs (9 to 9.5 feet below pad elevation); refer to the figure for groundwater depths. Methane survey sample points were collected via the post-run tubing methodology, with the post-run tubing point set 0.5 to 1 foot above the water table, sealed with hydrated bentonite, and allowed to equilibrate 2 hours prior to sampling. Helium leak detection was performed at one location (#17) per the work plan. Leak detection was performed by installing a tee in the sample tubing inside the shroud, downstream from the purge pump. After verifying that helium content was ~30% inside the shroud, the helium detector was used to measure helium at one outlet of the tee while the GEM 2000 landfill gas detector was used to measure methane at the other outlet. The soil vapor was also screened with a PID. Methane and VOCs were not detected at either survey location (refer to figure for results). At the designated VOC sample location, a screened implant was set one foot above the water table and constructed with a sand pack and bentonite/cement seal per the work plan. This location will be sampled after being allowed to equilibrate for the required time, as weather conditions permit.

The building A pad height was approximately 3 feet above the surrounding ground surface. Groundwater was encountered at depths ranging from 1 foot bgs in the middle-north portion of the pad to 6 feet bgs in the eastern portion. Methane survey samples were collected using the post-run

tubing method at three locations in the central portion of the pad and a screened implant was installed at the designated VOC sample location. Due to time constraints, implants were also installed at the remaining two accessible methane survey points for future sampling. Methane and VOCs were not detected at any locations on Building A.

**Unsatisfactory Conditions & Recommended Changes:**

**F|S Personnel (sign):** 

**Print:** **Kristin Anderson** **Date:** **2/16/2018**

**Attachments (list here):**

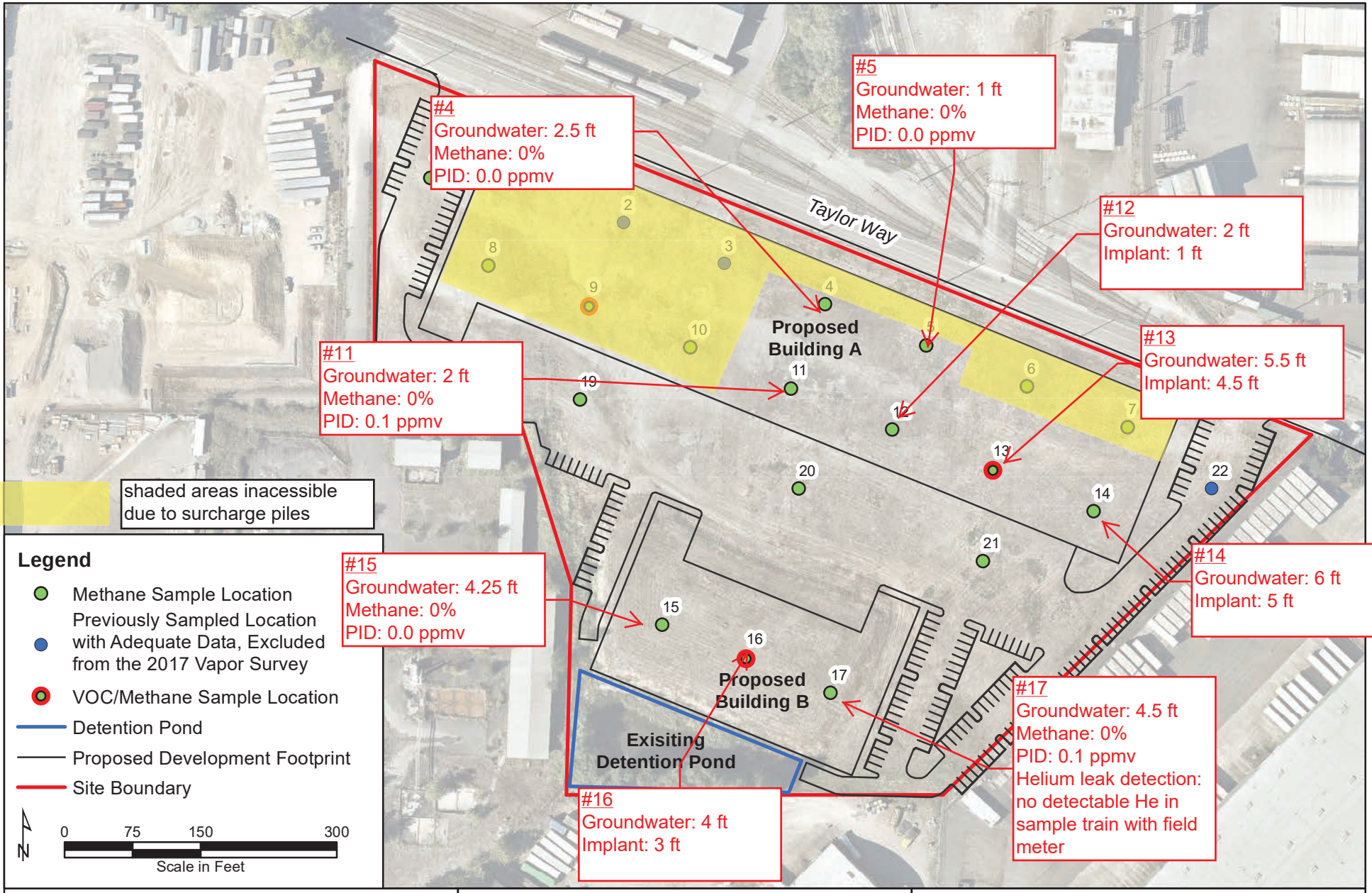
- Field Map Markup for 2.18.2018

**Caption:** Standing water in stormwater pond (photo taken on site visit 2/13)

**Caption:** Drilling on building B pad, muddy conditions

**Caption:** Capped surface tubing to vapor sample implant

**Caption**: Purging post-run tubing sample point with peristaltic pump

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strategy • science • engineering

**Proposed Sampling Plan for the 1514 Taylor Way Site**
**1514 Taylor Way Development**
**Tacoma, Washington**

Figure 1
Vapor Survey Sample Locations

I:\GIS\Projects\Ave55-TaylorWay\MXD\Figure 1 Vapor Survey Sample Locations.mxd
4/7/2017

# Field Activities Report

| | | | |
|---|---|---|---|
| **Date:** | September 10, 2018 | **Project:** | Ave 55 – Taylor Way |
| **Location:** | 1514 Taylor Way, Tacoma, Wa | | |
| **Project Activity:** | Installation of Sub-Slab Vapor Pins in Buildings A and B | **Project Manager:** | Tom Colligan |

**Description of site work activities, work locations, equipment used, site conditions, field personnel and visitors, safety and work meetings, and other notable events/occurrences.**

On September 10, 2018, 14 sub-slab Vapor Pins, VP-1 through VP-14, were installed at the site in order to assess vapor risk to occupants in the buildings. 8 soil vapor pins were installed in Building A and 6 were installed in building B (see field figures below). The slab varied in thickness from 7 to 9 inches thick. Stainless steel Vapor Pins were installed using a 1.5 extensions and capped with stainless steel secured covers that were installed to be flushed with the surrounding concrete surface.

The first Vapor Pin, VP-1, was installed at approximately 0910 am, and the last Vapor Pin VP-13 was installed at 1225pm. All Vapor Pin locations will be allowed to equilibrate for 48 hrs prior to sampling soil gas. The locations for four of the Vapor Pin (VP-9, VP-10, VP-12, and VP-13) were adjusted by Ecology. The attached figures show the final locations. All locations were in accordance with final Ecology approved locations, and no locations were needed to be adjusted in the field. The attached field figures show the final locations.

Floyd|Snider will be onsite September 12, 2018 to collect soil gas from all 14 vapor pin locations.

**Unsatisfactory Conditions & Recommended Changes:**

None.

**F|S Personnel (sign):**  **Print: Gabriel Cisneros** **Date: 09/11/2018**

**Attachments:**

Draft field maps that shows the vapor pin locations.

**Photographs:**

Side view of the slab in Building A with Vapor Pin for scale.

Installation of a Vapor Pin.

Hammering in Vapor Pin VP-14.

Vapor Pin VP-14 prior to capping and installing the flush-mounted cover.


Vapor Pin VP-10 in Ecology adjusted location with stainless-steel cover. VP-10 is adjacent to the northeast office room in Building B. Looking west-northwest

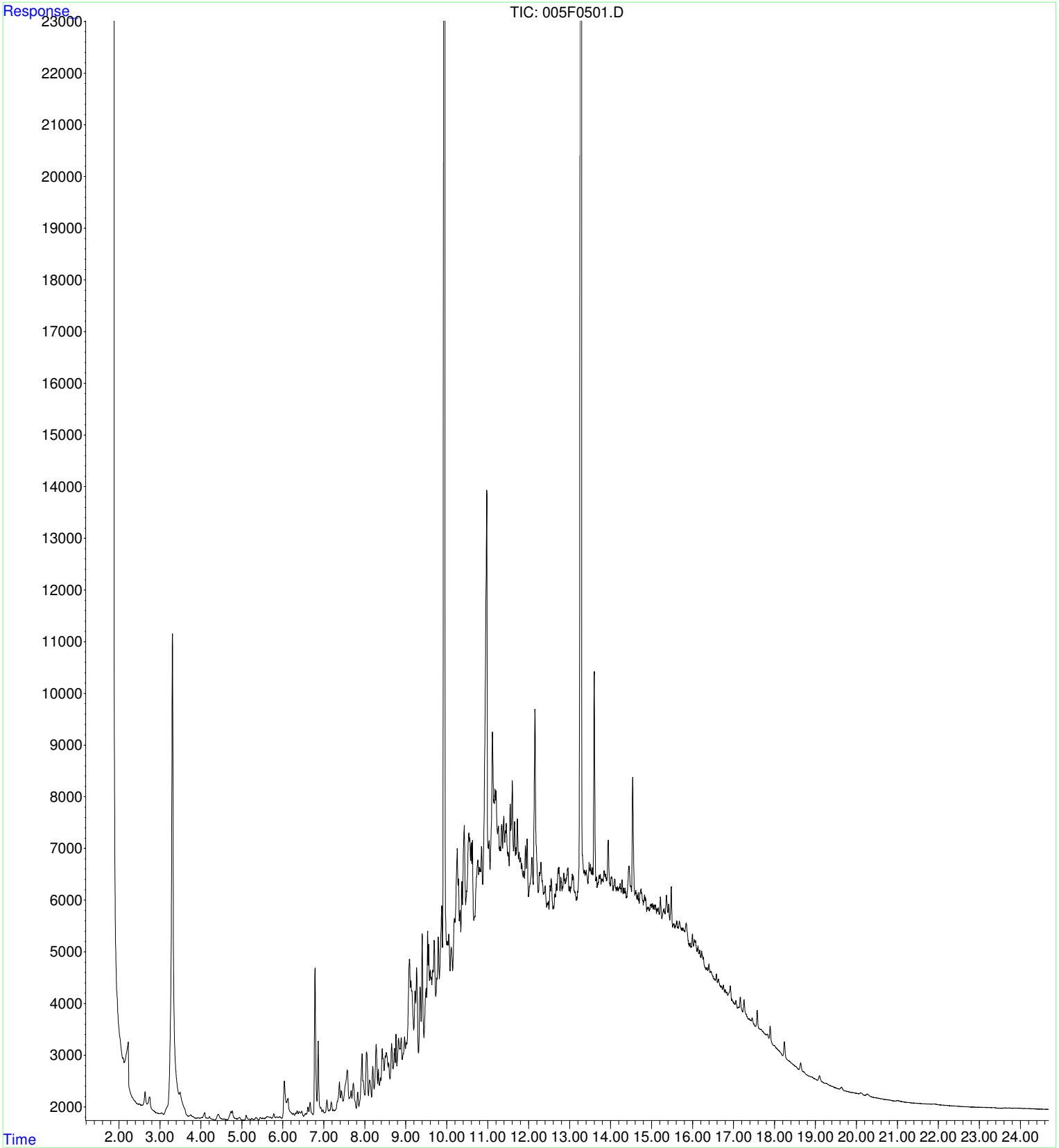
Vapor Pins VP-12 and VP-13 adjacent to northwest office in Building B in Ecology adjusted locations. Looking north-northwest

1514 Taylor Way Development

# Interim Action Completion Report

# Appendix B
# Laboratory Reports

File :C:\GC-23\Data\123016\GC-23123016 41\005F0501.D
Operator : WC
Acquired : 30-Dec-2016, 15:27:56 using AcqMethod DX020216.M
Instrument : HP5890
Sample Name: 1612278-001B
Misc Info :
Vial Number: 5



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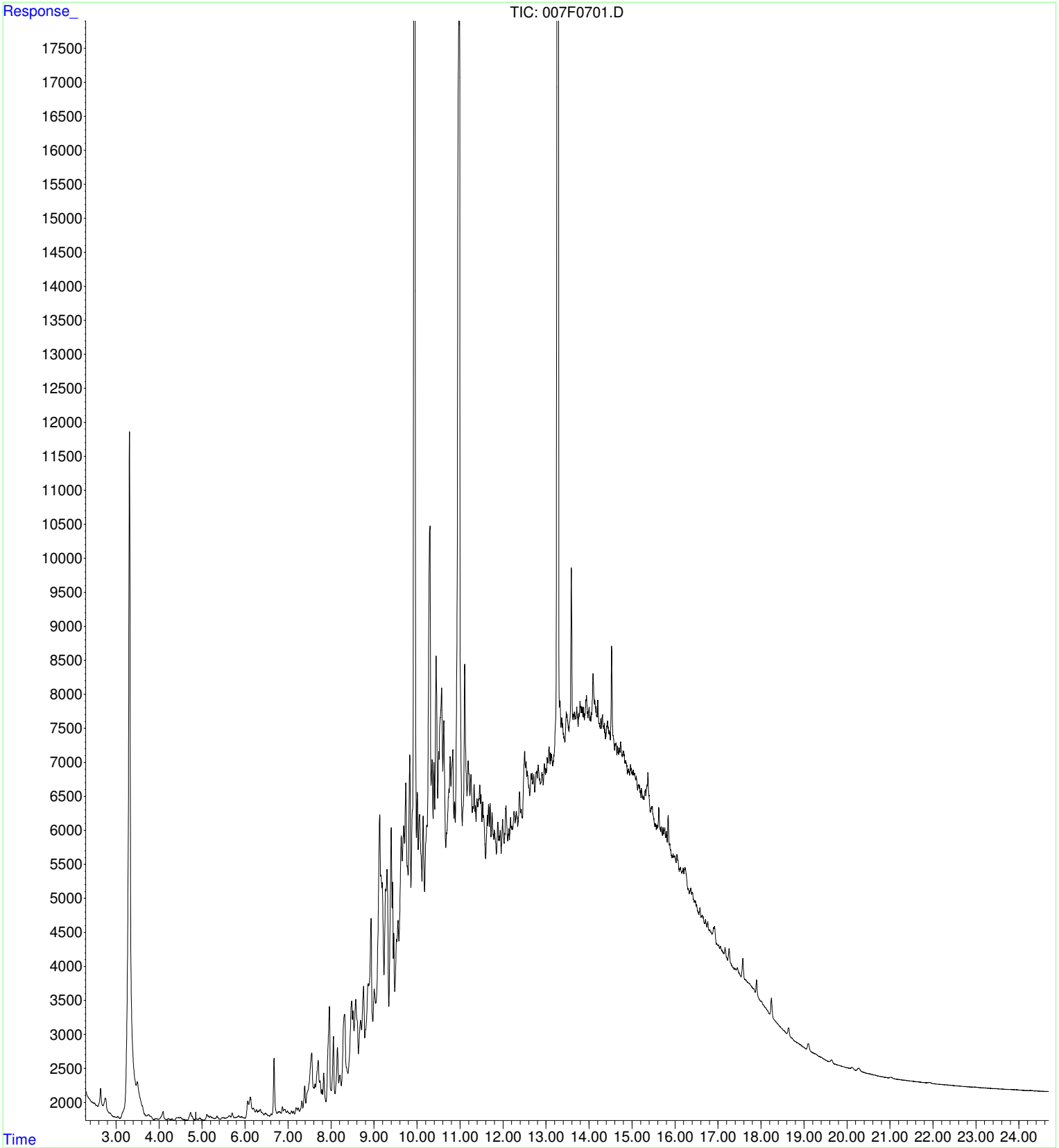
Instrument : HP5890
Sample Name: 1612278-002B
Misc Info :
Vial Number: 7



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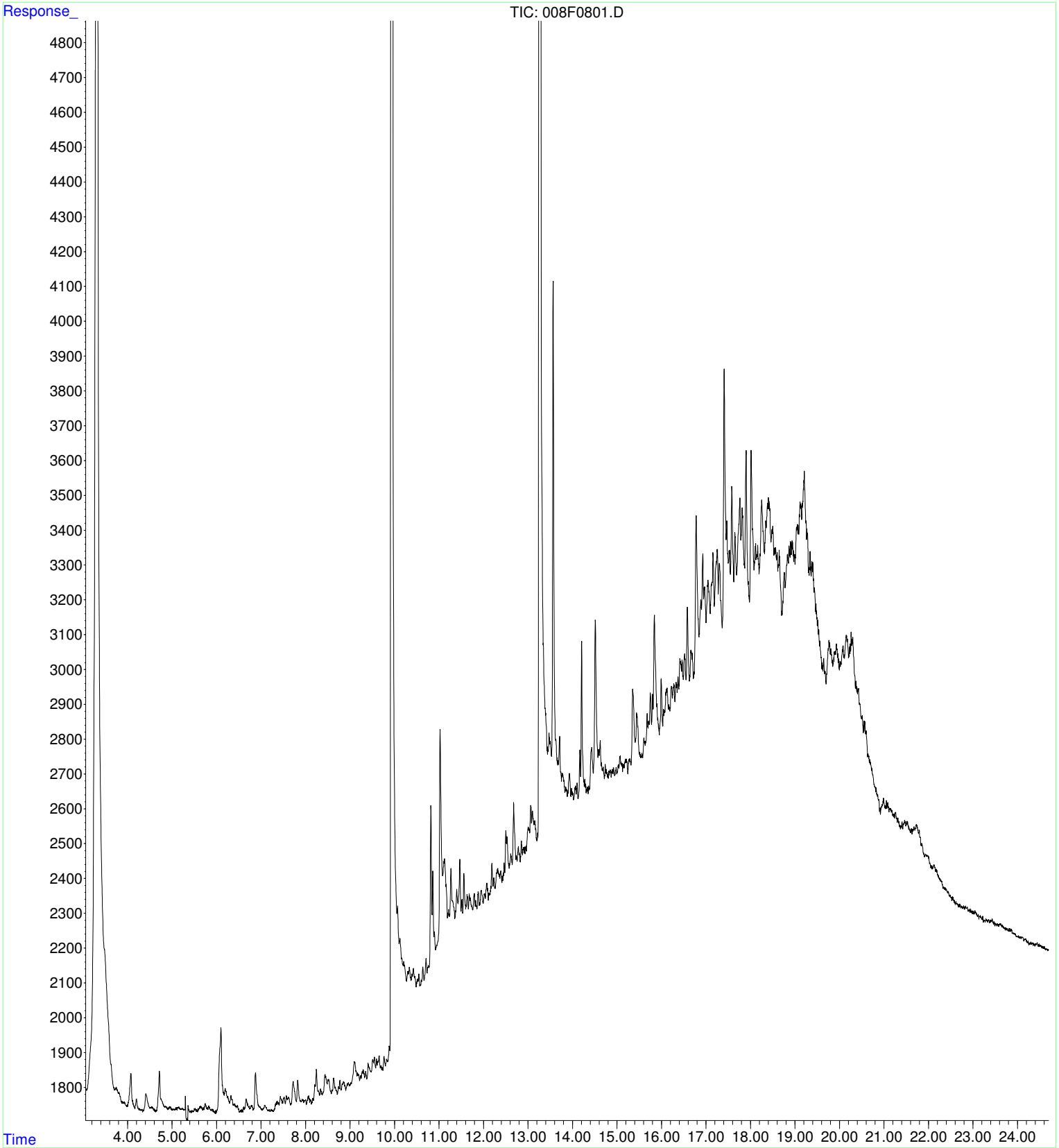
Operator : WC
Acquired : 30-Dec-2016, 17:00:24 using AcqMethod DX020216.M
Instrument : HP5890
Sample Name: 1612278-003B
Misc Info :
Vial Number: 8



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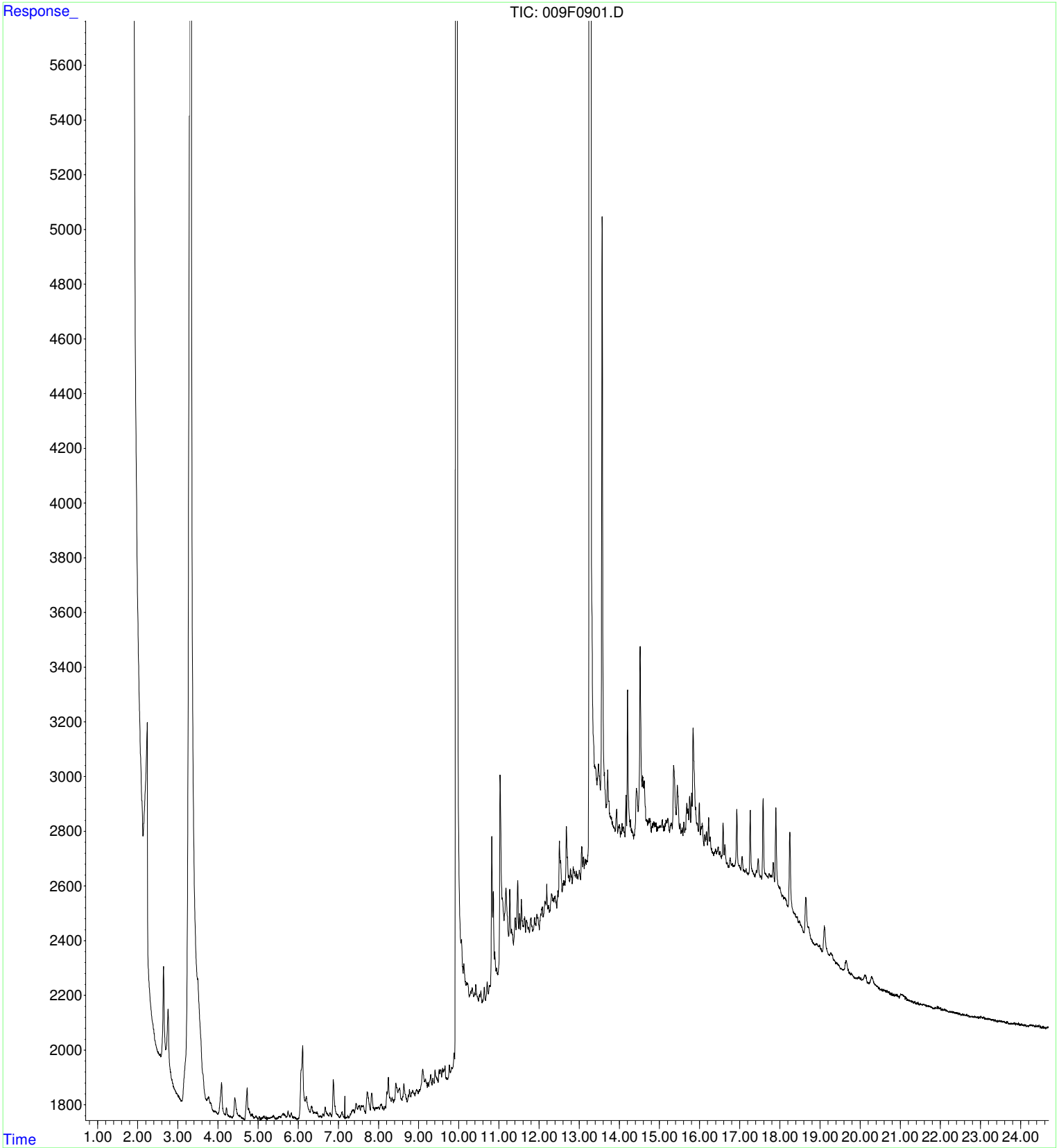
Instrument : HP5890
Sample Name: 1612278-004B
Misc Info :
Vial Number: 9



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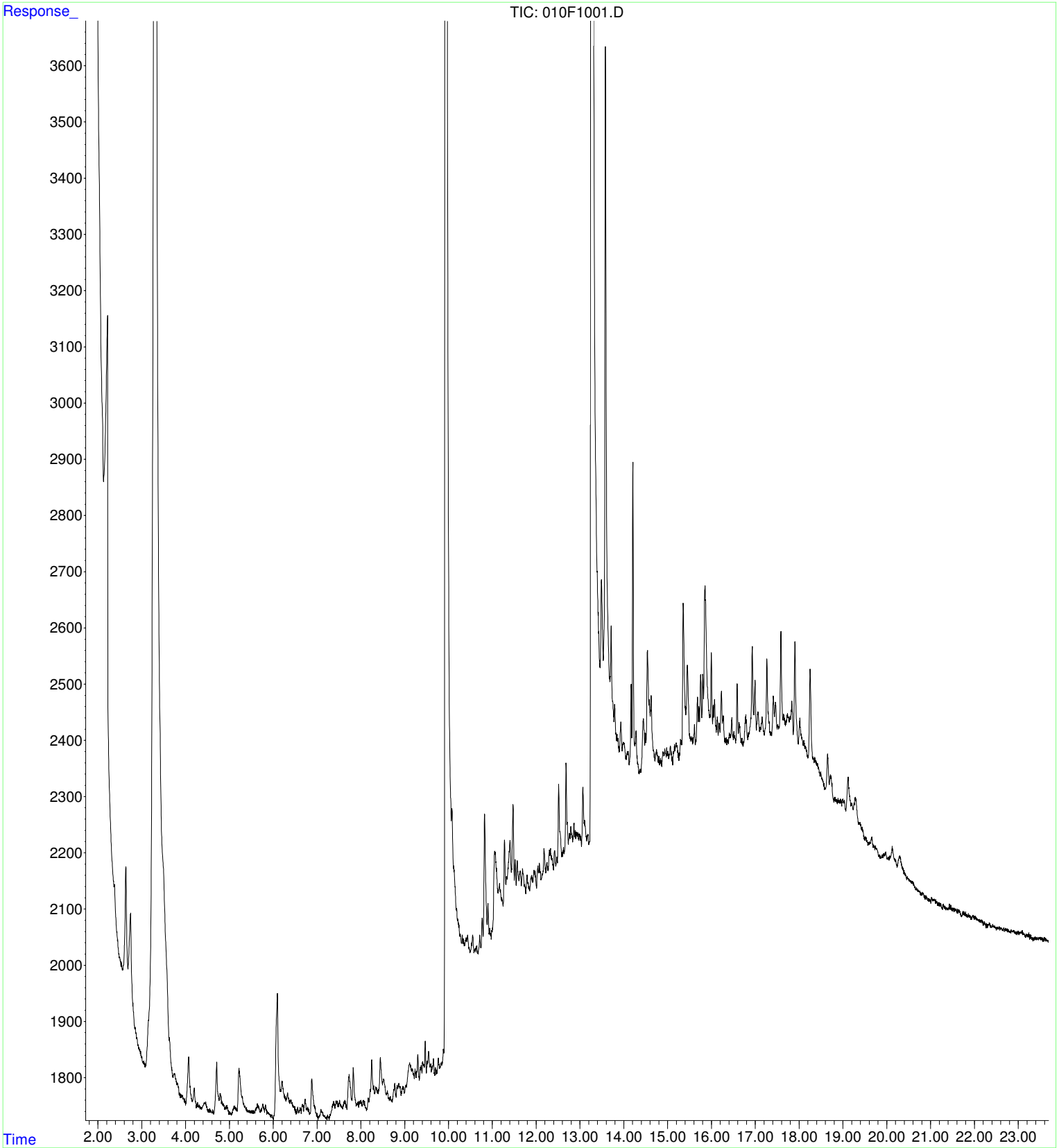
Instrument : HP5890
Sample Name: 1612278-005B
Misc Info :
Vial Number: 10



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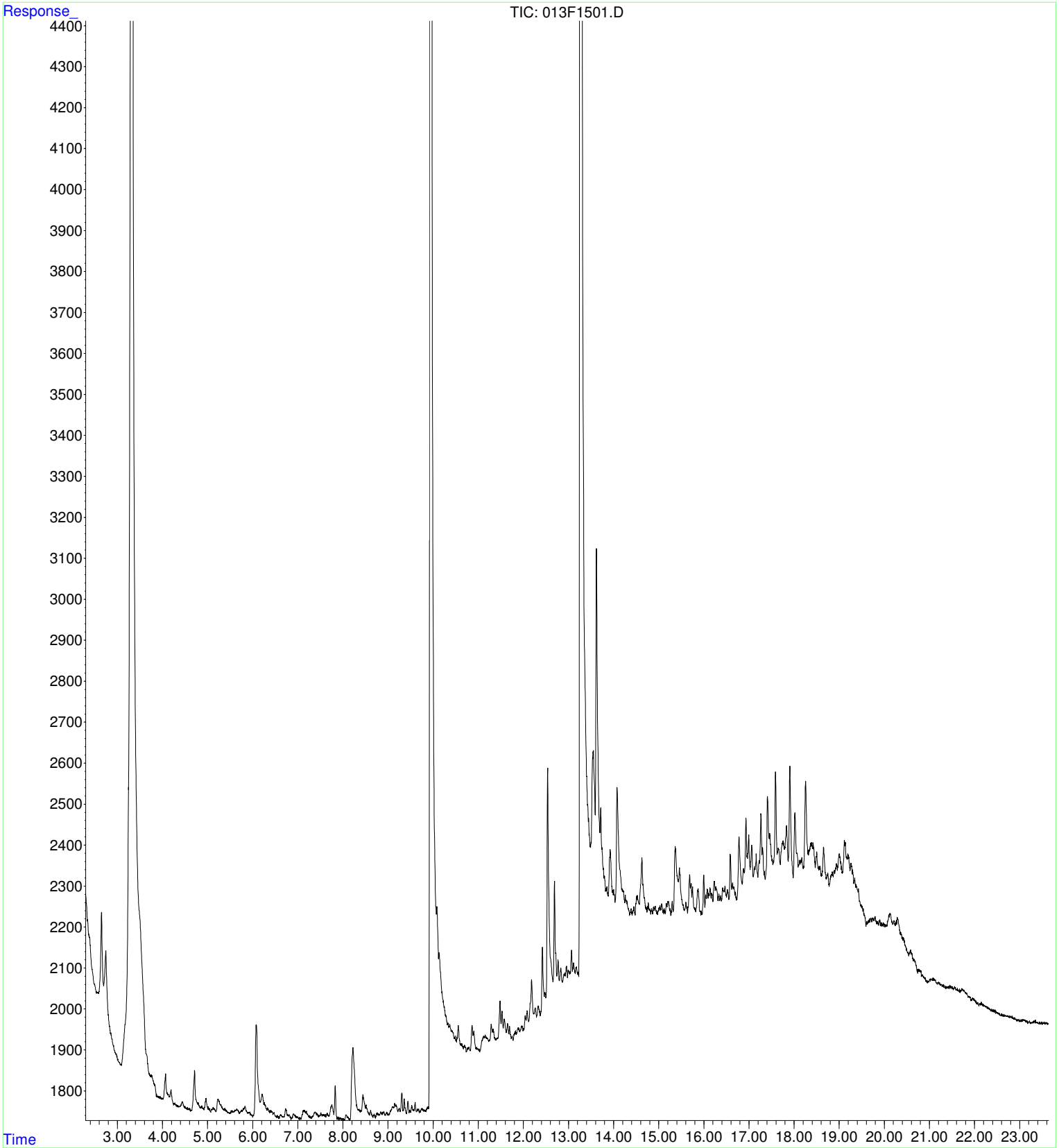
Sample Name: 1612278-006B
Misc Info :
Vial Number: 13



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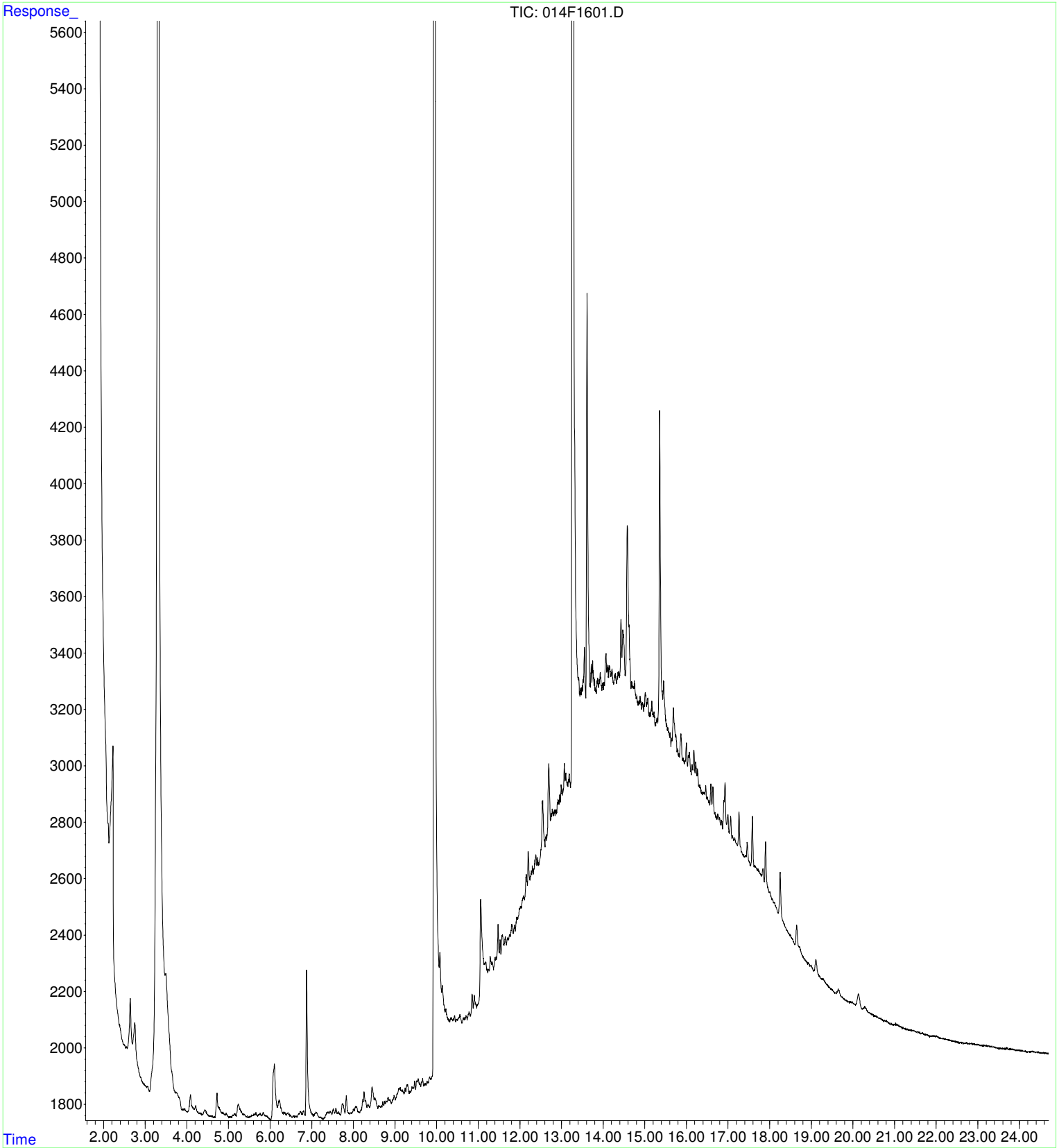
Operator : WC
Acquired : 30-Dec-2016, 21:05:33 using AcqMethod DX020216.M
Instrument : HP5890
Sample Name: 1612278-007B
Misc Info :
Vial Number: 14



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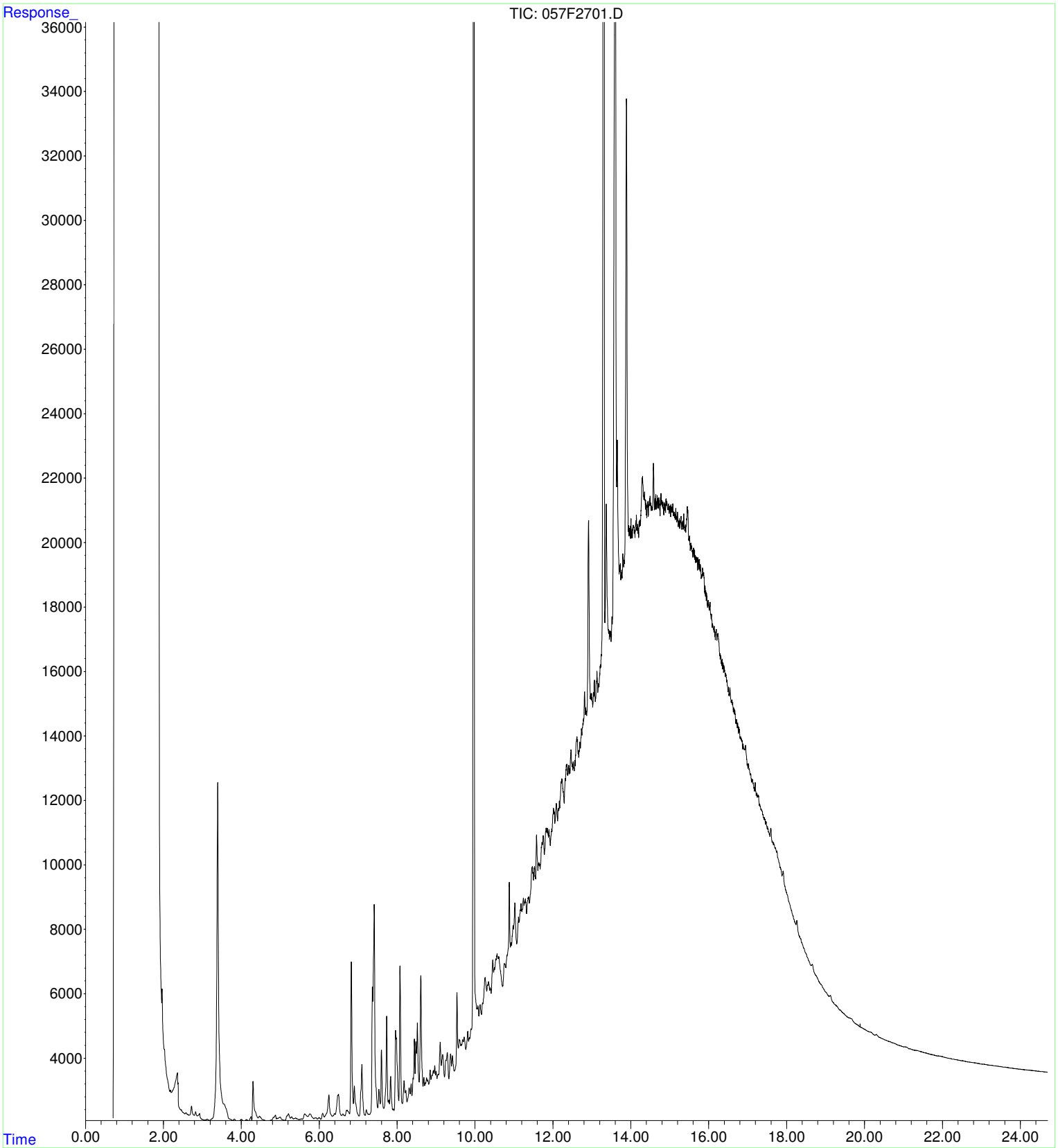
Instrument : HP5890
Sample Name: 1612278-008B
Misc Info :
Vial Number: 57



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Operator : WC
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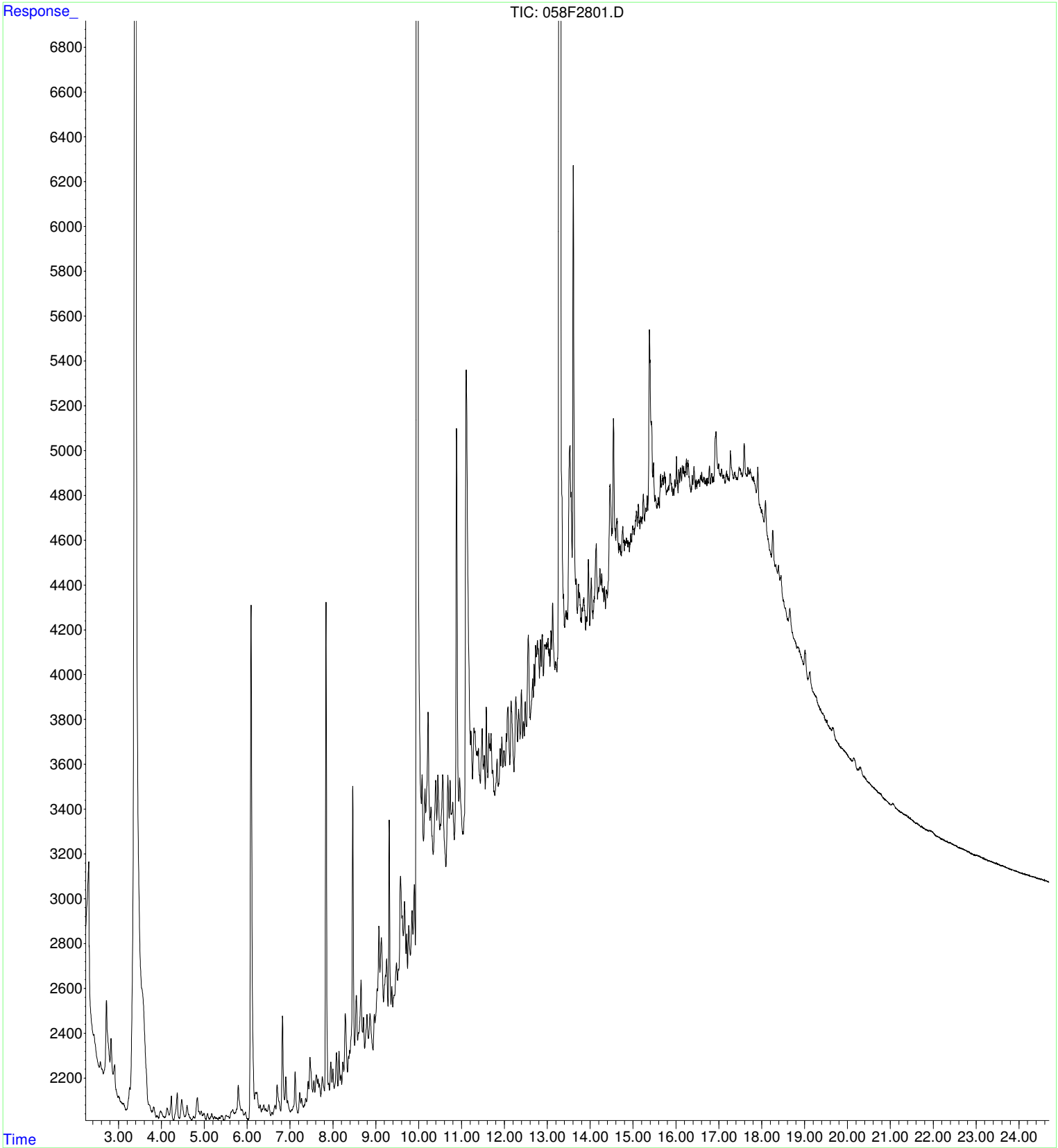
Instrument : HP5890
Sample Name: 1612278-010B
Misc Info :
Vial Number: 58



File :C:\GC-23\Data\123016\GC-23010316 36\059F2901.D
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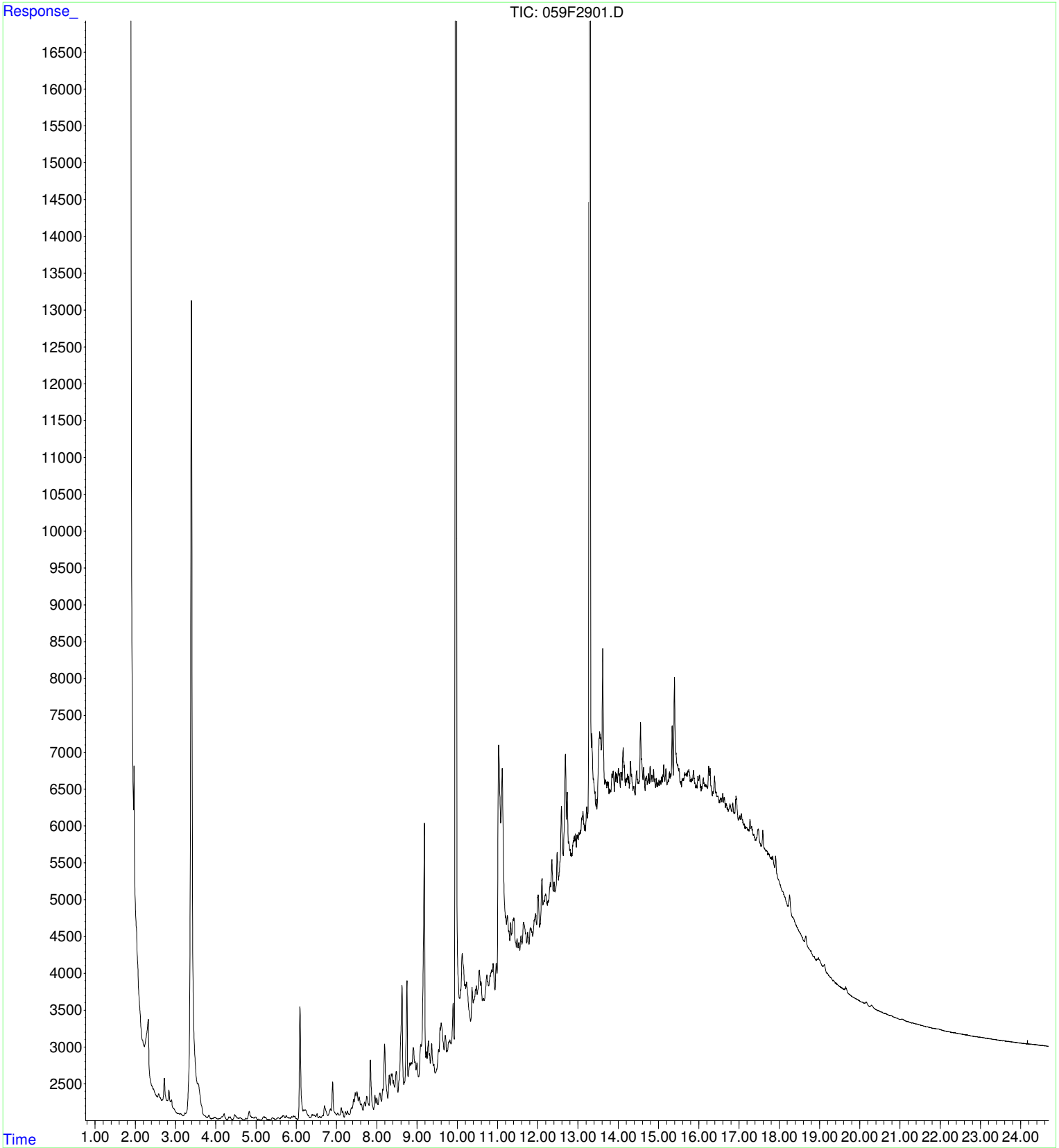
Acquired : 04-Jan-2017, 00:02:14 using AcqMethod DX020216.M
Instrument : HP5890
Sample Name: 1612278-011B
Misc Info :
Vial Number: 59



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Floyd | Snider**
Tom Colligan
601 Union St., Suite 600
Seattle, WA 98101

**RE: Ave 55 - Taylor Way**
**Work Order Number: 1612278**

January 09, 2017

**Attention Tom Colligan:**

Fremont Analytical, Inc. received 12 sample(s) on 12/28/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***
***Dissolved Gases by RSK-175***
***Dissolved Mercury by EPA Method 245.1***
***Dissolved Metals by EPA Method 200.8***
***Gasoline by NWTPH-Gx***
***Hexavalent Chromium by EPA 7196 / SM 3500 Cr B***
***Semi-Volatile Organic Compounds by EPA Method 8270***
***Volatile Organic Compounds by EPA Method 8260C***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

*DoD/ELAP Certification #L2371, ISO/IEC 17025:2005*
*ORELAP Certification: WA 100009-007 (NELAP Recognized)*

**Date:** *01/09/2017*

**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Work Order:** 1612278

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 1612278-001 | TWP16-PMW1A | 12/28/2016 10:20 AM | 12/28/2016 5:24 PM |
| 1612278-002 | TWP16-PMW1B | 12/28/2016 10:30 AM | 12/28/2016 5:24 PM |
| 1612278-003 | TWP16-PMW2B | 12/28/2016 12:00 PM | 12/28/2016 5:24 PM |
| 1612278-004 | TWP16-PMW2X | 12/28/2016 12:05 PM | 12/28/2016 5:24 PM |
| 1612278-005 | TWP16-PMW2A | 12/28/2016 12:00 PM | 12/28/2016 5:24 PM |
| 1612278-006 | TWP16-PMW3A | 12/28/2016 1:20 PM | 12/28/2016 5:24 PM |
| 1612278-007 | TWP16-PMW3B | 12/28/2016 1:15 PM | 12/28/2016 5:24 PM |
| 1612278-008 | TWP16-PMW4A | 12/28/2016 2:25 PM | 12/28/2016 5:24 PM |
| 1612278-009 | TWP16-PMW4B | 12/28/2016 2:45 PM | 12/28/2016 5:24 PM |
| 1612278-010 | TWP16-PMW5A | 12/28/2016 3:35 PM | 12/28/2016 5:24 PM |
| 1612278-011 | TWP16-PMW5B | 12/28/2016 4:00 PM | 12/28/2016 5:24 PM |
| 1612278-012 | Trip Blank | 12/20/2016 2:59 PM | 12/28/2016 5:24 PM |

# Case Narrative

WO#: **1612278**
Date: **1/9/2017**

**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 7.79 | 0.100 | DE | mg/L | 20 | 1/6/2017 12:01:00 PM |

**NOTES:**
E - Estimated value. The amount exceeds the linear working range of the instrument.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 49.9 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Diesel Range Organics (C12-C24) | 483 | 49.9 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Heavy Oil | 943 | 99.7 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Surr: 2-Fluorobiphenyl | 77.9 | 50-150 | | %Rec | 1 | 12/30/2016 3:27:56 PM |
| Surr: o-Terphenyl | 83.9 | 50-150 | | %Rec | 1 | 12/30/2016 3:27:56 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Chlorophenol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,3-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,4-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,2-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzyl alcohol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-chloroethyl) ether | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Methylphenol (o-cresol) | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachloroethane | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| N-Nitrosodi-n-propylamine | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Nitrobenzene | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Isophorone | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Methylphenol (p-cresol) | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Nitrophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dimethylphenol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-chloroethoxy)methane | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,2,4-Trichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Naphthalene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chloroaniline | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorobutadiene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chloro-3-methylphenol | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Methylnaphthalene | 0.593 | 0.495 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Client Sample ID:** **TWP16-PMW1A**

**Collection Date:** 12/28/2016 10:20:00 AM
**Matrix:** Groundwater

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.777 | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorocyclopentadiene | ND | 0.991 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4,6-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4,5-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Chloronaphthalene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Nitroaniline | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Acenaphthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dimethylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,6-Dinitrotoluene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Acenaphthylene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dinitrophenol | ND | 1.98 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dibenzofuran | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dinitrotoluene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Nitrophenol | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Fluorene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Diethylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.95 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Bromophenyl phenyl ether | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Pentachlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Phenanthrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Carbazole | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Di-n-butyl phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzyl Butylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benz[a]anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Chrysene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Di-n-octyl phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (b) fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (k) fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo[a]pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dibenzo (a,h) anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (g,h,I) perylene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: 2,4,6-Tribromophenol | 96.5 | 5-127 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: 2-Fluorobiphenyl | 61.1 | 24.1-139 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: Nitrobenzene-d5 | 65.5 | 21.9-139 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: Phenol-d6 | 62.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: p-Terphenyl | 60.4 | 25.2-132 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | 55.1 | 50.0 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| Surr: 4-Bromofluorobenzene | 96.3 | 65-135 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 1:40:34 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 1:40:34 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Surr: 1-Bromo-4-fluorobenzene | 96.7 | 64.2-128 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:17:29 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 1.83 | 1.00 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Barium | 357 | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Chromium | 0.614 | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Zinc | 2.44 | 1.50 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:16:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Diesel Range Organics (C12-C24) | 416 | 50.3 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Heavy Oil | 1,170 | 101 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Surr: 2-Fluorobiphenyl | 71.2 | 50-150 | | %Rec | 1 | 12/30/2016 4:29:34 PM |
| Surr: o-Terphenyl | 70.9 | 50-150 | | %Rec | 1 | 12/30/2016 4:29:34 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Chlorophenol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,3-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,4-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,2-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzyl alcohol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-chloroethyl) ether | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Methylphenol (o-cresol) | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachloroethane | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| N-Nitrosodi-n-propylamine | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Nitrobenzene | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Isophorone | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Methylphenol (p-cresol) | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Nitrophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dimethylphenol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-chloroethoxy)methane | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,2,4-Trichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Naphthalene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chloroaniline | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorobutadiene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chloro-3-methylphenol | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Methylnaphthalene | ND | 0.496 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1-Methylnaphthalene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorocyclopentadiene | ND | 0.992 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4,6-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4,5-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Chloronaphthalene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Nitroaniline | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Acenaphthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dimethylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,6-Dinitrotoluene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Acenaphthylene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dinitrophenol | ND | 1.98 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dibenzofuran | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dinitrotoluene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Nitrophenol | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Fluorene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Diethylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.96 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Bromophenyl phenyl ether | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Pentachlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Phenanthrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Carbazole | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Di-n-butyl phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzyl Butylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benz[a]anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Chrysene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Di-n-octyl phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (b) fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (k) fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo[a]pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dibenzo (a,h) anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (g,h,I) perylene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Surr: 2,4,6-Tribromophenol | 67.7 | 5-127 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: 2-Fluorobiphenyl | 64.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: Nitrobenzene-d5 | 77.6 | 21.9-139 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: Phenol-d6 | 68.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: p-Terphenyl | 72.0 | 25.2-132 | | %Rec | 1 | 1/5/2017 5:56:17 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Methyl tert-butyl ether (MTBE) | 1.30 | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 2:09:50 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: Toluene-d8 | 103 | 40.1-139 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 2:09:50 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Client Sample ID:** **TWP16-PMW1B**

**Collection Date:** 12/28/2016 10:30:00 AM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:19:11 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 6.02 | 1.00 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Barium | 17.5 | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Chromium | 0.894 | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:19:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Diesel Range Organics (C12-C24) | 107 | 50.3 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Heavy Oil | ND | 101 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Heavy Oil Range Organics | 254 | 101 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Surr: 2-Fluorobiphenyl | 67.1 | 50-150 | | %Rec | 1 | 12/30/2016 5:00:24 PM |
| Surr: o-Terphenyl | 77.3 | 50-150 | | %Rec | 1 | 12/30/2016 5:00:24 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Chlorophenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,3-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,4-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,2-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzyl alcohol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-chloroethyl) ether | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Methylphenol (o-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachloroethane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| N-Nitrosodi-n-propylamine | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Nitrobenzene | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Isophorone | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Methylphenol (p-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Nitrophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dimethylphenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-chloroethoxy)methane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,2,4-Trichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Naphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chloroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorobutadiene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chloro-3-methylphenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Methylnaphthalene | ND | 0.504 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1-Methylnaphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorocyclopentadiene | ND | 1.01 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4,6-Trichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4,5-Trichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Nitroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Acenaphthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dimethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,6-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Acenaphthylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dinitrophenol | ND | 2.02 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dibenzofuran | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Nitrophenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Fluorene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Diethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.04 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Bromophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Pentachlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Phenanthrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Carbazole | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Di-n-butyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzyl Butylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benz[a]anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Chrysene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Di-n-octyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (b) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (k) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo[a]pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dibenzo (a,h) anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (g,h,I) perylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Surr: 2,4,6-Tribromophenol | 107 | 5-127 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: 2-Fluorobiphenyl | 60.3 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: Nitrobenzene-d5 | 66.8 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: Phenol-d6 | 68.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:17:20 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: p-Terphenyl | 75.2 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:17:20 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 2:39:06 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Client Sample ID:** **TWP16-PMW2B**

**Collection Date:** 12/28/2016 12:00:00 PM
**Matrix:** Groundwater

**Volatile Organic Compounds by EPA Method 8260C** Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Surr: Dibromofluoromethane | 104 | 45.4-152 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.9 | 64.2-128 | | %Rec | 1 | 1/4/2017 2:39:06 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Client Sample ID:** **TWP16-PMW2B**

**Collection Date:** 12/28/2016 12:00:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:20:53 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Barium | 161 | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:22:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.0 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Diesel Range Organics (C12-C24) | 136 | 50.0 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Heavy Oil Range Organics | 133 | 100 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Surr: 2-Fluorobiphenyl | 77.4 | 50-150 | | %Rec | 1 | 12/30/2016 5:31:13 PM |
| Surr: o-Terphenyl | 91.6 | 50-150 | | %Rec | 1 | 12/30/2016 5:31:13 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Chlorophenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,3-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,4-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,2-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzyl alcohol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-chloroethyl) ether | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Methylphenol (o-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachloroethane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| N-Nitrosodi-n-propylamine | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Nitrobenzene | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Isophorone | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Methylphenol (p-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Nitrophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dimethylphenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-chloroethoxy)methane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,2,4-Trichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Naphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chloroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorobutadiene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chloro-3-methylphenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Methylnaphthalene | ND | 0.504 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1-Methylnaphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorocyclopentadiene | ND | 1.01 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4,6-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4,5-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Nitroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Acenaphthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dimethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,6-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Acenaphthylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dinitrophenol | ND | 2.01 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dibenzofuran | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Nitrophenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Fluorene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Diethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.04 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Bromophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Pentachlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Phenanthrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Carbazole | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Di-n-butyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzyl Butylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benz[a]anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Chrysene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Di-n-octyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (b) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (k) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo[a]pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dibenzo (a,h) anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (g,h,I) perylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Surr: 2,4,6-Tribromophenol | 99.3 | 5-127 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: 2-Fluorobiphenyl | 59.9 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: Nitrobenzene-d5 | 71.0 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: Phenol-d6 | 62.0 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:38:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: p-Terphenyl | 66.7 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:38:27 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: 4-Bromofluorobenzene | 95.8 | 65-135 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 3:08:27 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.2 | 64.2-128 | | %Rec | 1 | 1/4/2017 3:08:27 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Client Sample ID:** **TWP16-PMW2X**

**Collection Date:** 12/28/2016 12:05:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:22:36 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Barium | 165 | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:26:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 0.191 | 0.00500 | | mg/L | 1 | 1/6/2017 11:51:00 AM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.2 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Diesel Range Organics (C12-C24) | 82.1 | 50.2 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Heavy Oil Range Organics | 109 | 100 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Surr: 2-Fluorobiphenyl | 72.8 | 50-150 | | %Rec | 1 | 12/30/2016 6:01:59 PM |
| Surr: o-Terphenyl | 87.8 | 50-150 | | %Rec | 1 | 12/30/2016 6:01:59 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Chlorophenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzyl alcohol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-chloroethyl) ether | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachloroethane | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Nitrobenzene | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Isophorone | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Nitrophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dimethylphenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Naphthalene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chloroaniline | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorobutadiene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chloro-3-methylphenol | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Methylnaphthalene | ND | 0.502 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorocyclopentadiene | ND | 1.00 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4,6-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4,5-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Chloronaphthalene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Nitroaniline | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Acenaphthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dimethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,6-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Acenaphthylene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dinitrophenol | ND | 2.01 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dibenzofuran | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Nitrophenol | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Fluorene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Diethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.02 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Pentachlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Phenanthrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Carbazole | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Di-n-butyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzyl Butylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benz[a]anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Chrysene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Di-n-octyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (b) fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (k) fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo[a]pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dibenzo (a,h) anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (g,h,I) perylene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: 2,4,6-Tribromophenol | 88.0 | 5-127 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: 2-Fluorobiphenyl | 59.2 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: Nitrobenzene-d5 | 74.5 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: Phenol-d6 | 64.9 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: p-Terphenyl | 65.3 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| Surr: 4-Bromofluorobenzene | 97.2 | 65-135 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 3:37:49 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 3:37:49 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Client Sample ID:** **TWP16-PMW2A**

**Collection Date:** 12/28/2016 12:00:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Surr: 1-Bromo-4-fluorobenzene | 97.5 | 64.2-128 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:24:19 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 1.65 | 1.00 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Barium | 235 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Copper | 0.695 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Nickel | 1.09 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Zinc | 24.0 | 1.50 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:30:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 0.171 | 0.00500 | | mg/L | 1 | 1/6/2017 11:54:00 AM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.1 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Diesel Range Organics (C12-C24) | 78.9 | 50.1 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Surr: 2-Fluorobiphenyl | 71.7 | 50-150 | | %Rec | 1 | 12/30/2016 8:35:05 PM |
| Surr: o-Terphenyl | 81.0 | 50-150 | | %Rec | 1 | 12/30/2016 8:35:05 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Chlorophenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,3-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,4-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,2-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzyl alcohol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-chloroethyl) ether | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Methylphenol (o-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachloroethane | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| N-Nitrosodi-n-propylamine | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Nitrobenzene | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Isophorone | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Methylphenol (p-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Nitrophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dimethylphenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-chloroethoxy)methane | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,2,4-Trichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Naphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chloroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorobutadiene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chloro-3-methylphenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Methylnaphthalene | ND | 0.498 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1-Methylnaphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorocyclopentadiene | ND | 0.997 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| 2,4,6-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4,5-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Chloronaphthalene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Nitroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Acenaphthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dimethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,6-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Acenaphthylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dinitrophenol | ND | 1.99 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dibenzofuran | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Nitrophenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Fluorene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Diethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.98 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Bromophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Pentachlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Phenanthrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Carbazole | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Di-n-butyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzyl Butylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benz[a]anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Chrysene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Di-n-octyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (b) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (k) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo[a]pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dibenzo (a,h) anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (g,h,I) perylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Surr: 2,4,6-Tribromophenol | 71.6 | 5-127 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: 2-Fluorobiphenyl | 57.5 | 24.1-139 | | %Rec | 1 | 1/5/2017 7:20:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: Nitrobenzene-d5 | 54.7 | 21.9-139 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: Phenol-d6 | 44.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: p-Terphenyl | 70.6 | 25.2-132 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 4:07:10 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.0 | 64.2-128 | | %Rec | 1 | 1/4/2017 4:07:10 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Client Sample ID:** **TWP16-PMW3A**

**Collection Date:** 12/28/2016 1:20:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:34:27 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 2.02 | 1.00 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Barium | 22.7 | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Nickel | 11.7 | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Zinc | 4.41 | 1.50 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:33:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 49.7 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Heavy Oil | ND | 99.4 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Heavy Oil Range Organics | 491 | 99.4 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Surr: 2-Fluorobiphenyl | 64.0 | 50-150 | | %Rec | 1 | 12/30/2016 9:05:33 PM |
| Surr: o-Terphenyl | 65.1 | 50-150 | | %Rec | 1 | 12/30/2016 9:05:33 PM |

**NOTES:**
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Chlorophenol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,3-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,4-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,2-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzyl alcohol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Methylphenol (o-cresol) | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachloroethane | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| N-Nitrosodi-n-propylamine | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Isophorone | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Methylphenol (p-cresol) | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dimethylphenol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-chloroethoxy)methane | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,2,4-Trichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Naphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chloroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorobutadiene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chloro-3-methylphenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Methylnaphthalene | ND | 0.499 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1-Methylnaphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorocyclopentadiene | ND | 0.998 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Chloronaphthalene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Nitroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Acenaphthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dimethylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,6-Dinitrotoluene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Acenaphthylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dibenzofuran | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dinitrotoluene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Nitrophenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Fluorene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Diethylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.99 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Bromophenyl phenyl ether | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Phenanthrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Carbazole | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Di-n-butyl phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzyl Butylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benz[a]anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Chrysene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Di-n-octyl phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (b) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (k) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo[a]pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dibenzo (a,h) anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (g,h,I) perylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Surr: 2,4,6-Tribromophenol | 113 | 5-127 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: 2-Fluorobiphenyl | 55.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: Nitrobenzene-d5 | 64.2 | 21.9-139 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: Phenol-d6 | 61.0 | 10.3-128 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: p-Terphenyl | 75.4 | 25.2-132 | | %Rec | 1 | 1/5/2017 7:41:31 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Surr: Toluene-d8 | 102 | 65-135 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: 4-Bromofluorobenzene | 96.4 | 65-135 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 4:36:32 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 4:36:32 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Client Sample ID:** **TWP16-PMW3B**

**Collection Date:** 12/28/2016 1:15:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:36:09 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 25.1 | 1.00 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Barium | 16.1 | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Nickel | 1.05 | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | 0.0642 | 0.0500 | | mg/L | 1 | 12/29/2016 9:37:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 14.6 | 0.100 | DE | mg/L | 20 | 1/6/2017 12:03:00 PM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/3/2017 11:02:05 PM |
| Heavy Oil | 3,750 | 101 | | µg/L | 1 | 1/3/2017 11:02:05 PM |
| Surr: 2-Fluorobiphenyl | 74.6 | 50-150 | | %Rec | 1 | 1/3/2017 11:02:05 PM |
| Surr: o-Terphenyl | 78.5 | 50-150 | | %Rec | 1 | 1/3/2017 11:02:05 PM |
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Chlorophenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzyl alcohol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachloroethane | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Isophorone | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dimethylphenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Naphthalene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chloroaniline | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorobutadiene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chloro-3-methylphenol | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Methylnaphthalene | ND | 0.500 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1-Methylnaphthalene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorocyclopentadiene | ND | 1.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Chloronaphthalene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| 2-Nitroaniline | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Acenaphthene | 1.57 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dimethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,6-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Acenaphthylene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dibenzofuran | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Nitrophenol | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Fluorene | 0.808 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Diethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Phenanthrene | 0.631 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Carbazole | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Di-n-butyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzyl Butylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benz[a]anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Chrysene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Di-n-octyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (b) fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (k) fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo[a]pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dibenzo (a,h) anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (g,h,I) perylene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Surr: 2,4,6-Tribromophenol | 106 | 5-127 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: 2-Fluorobiphenyl | 63.3 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: Nitrobenzene-d5 | 62.4 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: Phenol-d6 | 58.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: p-Terphenyl | 54.8 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:02:25 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | 189 | 50.0 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Surr: Toluene-d8 | 102 | 65-135 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: 4-Bromofluorobenzene | 98.5 | 65-135 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 5:05:48 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| sec-Butylbenzene | 1.00 | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: 1-Bromo-4-fluorobenzene | 98.3 | 64.2-128 | | %Rec | 1 | 1/4/2017 5:05:48 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Client Sample ID:** **TWP16-PMW4A**

**Collection Date:** 12/28/2016 2:25:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:37:51 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 3.78 | 1.00 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Barium | 38.5 | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Nickel | 1.15 | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Zinc | 1.92 | 1.50 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:40:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:45:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-009
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: 4-Bromofluorobenzene | 96.3 | 65-135 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 5:35:04 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:45:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-009
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 5:35:04 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 4.15 | 0.100 | D | mg/L | 20 | 1/6/2017 12:05:00 PM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Diesel Range Organics (C12-C24) | 128 | 50.3 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Heavy Oil | 668 | 101 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Surr: 2-Fluorobiphenyl | 77.3 | 50-150 | | %Rec | 1 | 1/3/2017 11:32:08 PM |
| Surr: o-Terphenyl | 80.6 | 50-150 | | %Rec | 1 | 1/3/2017 11:32:08 PM |
| **NOTES:** DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24). | | | | | | |
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Chlorophenol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,3-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,4-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,2-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzyl alcohol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Methylphenol (o-cresol) | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachloroethane | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| N-Nitrosodi-n-propylamine | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Isophorone | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Methylphenol (p-cresol) | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dimethylphenol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-chloroethoxy)methane | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,2,4-Trichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Naphthalene | 1.03 | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chloroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorobutadiene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chloro-3-methylphenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Methylnaphthalene | ND | 0.499 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1-Methylnaphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorocyclopentadiene | ND | 0.999 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Chloronaphthalene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Nitroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Acenaphthene | 0.807 | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dimethylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,6-Dinitrotoluene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Acenaphthylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dibenzofuran | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dinitrotoluene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Nitrophenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Fluorene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Diethylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.99 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Bromophenyl phenyl ether | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Phenanthrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Carbazole | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Di-n-butyl phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzyl Butylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benz[a]anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Chrysene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Di-n-octyl phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (b) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (k) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo[a]pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dibenzo (a,h) anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (g,h,I) perylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Surr: 2,4,6-Tribromophenol | 96.2 | 5-127 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: 2-Fluorobiphenyl | 52.5 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:23:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: Nitrobenzene-d5 | 66.3 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: Phenol-d6 | 62.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: p-Terphenyl | 53.5 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: 4-Bromofluorobenzene | 97.4 | 65-135 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 6:04:21 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Naphthalene | 2.23 | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Surr: Dibromofluoromethane | 104 | 45.4-152 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.7 | 64.2-128 | | %Rec | 1 | 1/4/2017 6:04:21 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Client Sample ID:** **TWP16-PMW5A**

**Collection Date:** 12/28/2016 3:35:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:39:34 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Barium | 47.0 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Chromium | 1.34 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Copper | 1.06 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Nickel | 0.963 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Zinc | 5.57 | 1.50 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:44:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Diesel Range Organics (C12-C24) | 125 | 50.3 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Heavy Oil | 1,210 | 101 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Surr: 2-Fluorobiphenyl | 69.6 | 50-150 | | %Rec | 1 | 1/4/2017 12:02:14 AM |
| Surr: o-Terphenyl | 59.9 | 50-150 | | %Rec | 1 | 1/4/2017 12:02:14 AM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Chlorophenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,3-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,4-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,2-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzyl alcohol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-chloroethyl) ether | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Methylphenol (o-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachloroethane | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| N-Nitrosodi-n-propylamine | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Nitrobenzene | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Isophorone | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Methylphenol (p-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Nitrophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dimethylphenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-chloroethoxy)methane | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,2,4-Trichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Naphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chloroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorobutadiene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chloro-3-methylphenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Methylnaphthalene | ND | 0.498 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1-Methylnaphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorocyclopentadiene | ND | 0.997 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4,6-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4,5-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Chloronaphthalene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Nitroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dimethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,6-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Acenaphthylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dinitrophenol | ND | 1.99 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dibenzofuran | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Nitrophenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Fluorene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Diethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.98 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Bromophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Pentachlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Phenanthrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Carbazole | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Di-n-butyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzyl Butylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benz[a]anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Chrysene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Di-n-octyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (b) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (k) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo[a]pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dibenzo (a,h) anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (g,h,I) perylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Surr: 2,4,6-Tribromophenol | 110 | 5-127 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: 2-Fluorobiphenyl | 60.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: Nitrobenzene-d5 | 79.7 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: Phenol-d6 | 70.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: p-Terphenyl | 59.1 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:44:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: 4-Bromofluorobenzene | 97.0 | 65-135 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 6:33:38 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.3 | 64.2-128 | | %Rec | 1 | 1/4/2017 6:33:38 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Client Sample ID:** **TWP16-PMW5B**

**Collection Date:** 12/28/2016 4:00:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:41:15 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 2.41 | 1.00 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Barium | 3.43 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Chromium | 4.58 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Nickel | 0.706 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | 0.0557 | 0.0500 | | mg/L | 1 | 12/29/2016 10:21:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/20/2016 2:59:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-012
**Matrix:** Water
**Client Sample ID:** **Trip Blank**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Surr: Toluene-d8 | 101 | 65-135 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: 4-Bromofluorobenzene | 96.0 | 65-135 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Vinyl chloride | ND | 0.200 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromomethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Methylene chloride | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 2,2-Dichloropropane | ND | 2.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| cis-1,2-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloroform | 3.67 | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloropropene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Carbon tetrachloride | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Benzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Trichloroethene (TCE) | ND | 0.500 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromodichloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Dibromomethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| cis-1,3-Dichloropropene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Toluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| trans-1,3-Dichloropropylene | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,2-Trichloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3-Dichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Tetrachloroethene (PCE) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Dibromochloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/20/2016 2:59:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-012
**Matrix:** Water
**Client Sample ID:** **Trip Blank**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| m,p-Xylene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| o-Xylene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Styrene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Isopropylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromoform | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| n-Propylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 2-Chlorotoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 4-Chlorotoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| tert-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,3-Trichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| sec-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 4-Isopropyltoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,4-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| n-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Hexachloro-1,3-butadiene | ND | 4.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Naphthalene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Surr: Dibromofluoromethane | 100 | 45.4-152 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: Toluene-d8 | 103 | 40.1-139 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: 1-Bromo-4-fluorobenzene | 95.9 | 64.2-128 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA 7196 / SM 3500 Cr B

| Sample ID | **MB-R33688** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639409** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID | **LCS-R33688** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639411** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.223 | 0.0500 | 0.2500 | 0 | 89.1 | 80 | 120 | | | | |

| Sample ID | **1612278-001EDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639393** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | | 30 | |

| Sample ID | **1612278-001EMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639395** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.0228 | 0.0500 | 0.2500 | 0.009700 | 5.24 | 65 | 135 | | | | S |

**NOTES:**
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

| Sample ID | **1612278-001EMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639397** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.0209 | 0.0500 | 0.2500 | 0.009700 | 4.48 | 65 | 135 | 0 | | 30 | S |

**NOTES:**
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA 7196 / SM 3500 Cr B

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **1612278-003EMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | | RunNo: **33688** | | | |
| Client ID: **TWP16-PMW2B** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | | SeqNo: **639399** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | |
| Chromium, Hexavalent | 0.192 | 0.0500 | 0.2500 | 0 | 76.8 | 65 | 135 | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **1612278-003EMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | | RunNo: **33688** | | | |
| Client ID: **TWP16-PMW2B** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | | SeqNo: **639400** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | |
| Chromium, Hexavalent | 0.182 | 0.0500 | 0.2500 | 0 | 72.7 | 65 | 135 | 0.1920 | 5.46 | 30 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

Sample ID **MB-15816FB** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **MBLKW** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639666**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 1.00 | | | | | | | | | |
| Barium | ND | 0.500 | | | | | | | | | |
| Cadmium | ND | 0.200 | | | | | | | | | |
| Chromium | ND | 0.500 | | | | | | | | | |
| Copper | ND | 0.500 | | | | | | | | | |
| Lead | ND | 0.500 | | | | | | | | | |
| Nickel | ND | 0.500 | | | | | | | | | |
| Zinc | ND | 1.50 | | | | | | | | | |

**NOTES:**
Filter Blank

Sample ID **MB-15820** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **MBLKW** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639667**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 1.00 | | | | | | | | | |
| Barium | ND | 0.500 | | | | | | | | | |
| Cadmium | ND | 0.200 | | | | | | | | | |
| Chromium | ND | 0.500 | | | | | | | | | |
| Copper | ND | 0.500 | | | | | | | | | |
| Lead | ND | 0.500 | | | | | | | | | |
| Nickel | ND | 0.500 | | | | | | | | | |
| Zinc | ND | 1.50 | | | | | | | | | |

Sample ID **LCS-15820** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **LCSW** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639668**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 95.9 | 1.00 | 100.0 | 0 | 95.9 | 85 | 115 | | | | |
| Barium | 97.2 | 0.500 | 100.0 | 0 | 97.2 | 85 | 115 | | | | |
| Cadmium | 4.81 | 0.200 | 5.000 | 0 | 96.2 | 85 | 115 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

Sample ID **LCS-15820** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **LCSW** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639668**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 99.2 | 0.500 | 100.0 | 0 | 99.2 | 85 | 115 | | | | |
| Copper | 98.8 | 0.500 | 100.0 | 0 | 98.8 | 85 | 115 | | | | |
| Lead | 49.2 | 0.500 | 50.00 | 0 | 98.4 | 85 | 115 | | | | |
| Nickel | 98.3 | 0.500 | 100.0 | 0 | 98.3 | 85 | 115 | | | | |
| Zinc | 104 | 1.50 | 100.0 | 0 | 104 | 85 | 115 | | | | |

Sample ID **1612278-005DDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **TWP16-PMW2A** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639670**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 1.76 | 1.00 | | | | | | 1.650 | 6.71 | 30 | |
| Barium | 220 | 0.500 | | | | | | 235.0 | 6.37 | 30 | |
| Cadmium | ND | 0.200 | | | | | | 0 | | 30 | |
| Chromium | ND | 0.500 | | | | | | 0 | | 30 | |
| Copper | 0.510 | 0.500 | | | | | | 0.6950 | 30.7 | 30 | |
| Lead | ND | 0.500 | | | | | | 0 | | 30 | |
| Nickel | 0.867 | 0.500 | | | | | | 1.092 | 22.9 | 30 | |
| Zinc | 21.5 | 1.50 | | | | | | 23.98 | 10.8 | 30 | |

Sample ID **1612278-005DMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33704**
Client ID: **TWP16-PMW2A** Batch ID: **15820** Analysis Date: **1/3/2017** SeqNo: **639671**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 507 | 1.00 | 500.0 | 1.650 | 101 | 70 | 130 | | | | |
| Barium | 723 | 0.500 | 500.0 | 235.0 | 97.6 | 70 | 130 | | | | |
| Cadmium | 26.3 | 0.200 | 25.00 | 0.02850 | 105 | 70 | 130 | | | | |
| Chromium | 502 | 0.500 | 500.0 | 0.09950 | 100 | 70 | 130 | | | | |
| Copper | 470 | 0.500 | 500.0 | 0.6950 | 93.8 | 70 | 130 | | | | |
| Lead | 229 | 0.500 | 250.0 | 0.1060 | 91.6 | 70 | 130 | | | | |
| Nickel | 485 | 0.500 | 500.0 | 1.092 | 96.7 | 70 | 130 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

| Sample ID | **1612278-005DMS** | SampType: | **MS** | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33704** |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: | **15820** | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639671** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc | 527 | 1.50 | 500.0 | 23.98 | 101 | 70 | 130 | | | | |

| Sample ID | **1612278-005DMSD** | SampType: | **MSD** | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33704** |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: | **15820** | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639672** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 521 | 1.00 | 500.0 | 1.650 | 104 | 70 | 130 | 506.8 | 2.74 | 30 | |
| Barium | 721 | 0.500 | 500.0 | 235.0 | 97.1 | 70 | 130 | 723.0 | 0.341 | 30 | |
| Cadmium | 26.3 | 0.200 | 25.00 | 0.02850 | 105 | 70 | 130 | 26.33 | 0.198 | 30 | |
| Chromium | 500 | 0.500 | 500.0 | 0.09950 | 100 | 70 | 130 | 502.3 | 0.477 | 30 | |
| Copper | 477 | 0.500 | 500.0 | 0.6950 | 95.3 | 70 | 130 | 469.8 | 1.59 | 30 | |
| Lead | 225 | 0.500 | 250.0 | 0.1060 | 89.9 | 70 | 130 | 229.1 | 1.80 | 30 | |
| Nickel | 484 | 0.500 | 500.0 | 1.092 | 96.5 | 70 | 130 | 484.7 | 0.223 | 30 | |
| Zinc | 542 | 1.50 | 500.0 | 23.98 | 104 | 70 | 130 | 527.4 | 2.69 | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Mercury by EPA Method 245.1

| Sample ID | MB-15826 | SampType: | MBLK | | | Units: | µg/L | | Prep Date: | 1/3/2017 | | RunNo: | 33698 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | MBLKW | Batch ID: | 15826 | | | | | | Analysis Date: | 1/3/2017 | | SeqNo: | 639816 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Mercury | | ND | 0.100 | | | | | | | | | | | |

| Sample ID | LCS-15826 | SampType: | LCS | | | Units: | µg/L | | Prep Date: | 1/3/2017 | | RunNo: | 33698 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 15826 | | | | | | Analysis Date: | 1/3/2017 | | SeqNo: | 639817 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Mercury | | 2.67 | 0.100 | 2.500 | 0 | 107 | 85 | 115 | | | | | | |

| Sample ID | 1612278-005DDUP | SampType: | DUP | | | Units: | µg/L | | Prep Date: | 1/3/2017 | | RunNo: | 33698 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW2A | Batch ID: | 15826 | | | | | | Analysis Date: | 1/3/2017 | | SeqNo: | 639823 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Mercury | | ND | 0.100 | | | | | | 0 | | 20 | | | |

| Sample ID | 1612278-005DMS | SampType: | MS | | | Units: | µg/L | | Prep Date: | 1/3/2017 | | RunNo: | 33698 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW2A | Batch ID: | 15826 | | | | | | Analysis Date: | 1/3/2017 | | SeqNo: | 639824 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Mercury | | 2.66 | 0.100 | 2.500 | 0 | 106 | 80 | 120 | | | | | | |

| Sample ID | 1612278-005DMSD | SampType: | MSD | | | Units: | µg/L | | Prep Date: | 1/3/2017 | | RunNo: | 33698 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW2A | Batch ID: | 15826 | | | | | | Analysis Date: | 1/3/2017 | | SeqNo: | 639825 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Mercury | | 2.63 | 0.100 | 2.500 | 0 | 105 | 80 | 120 | 2.660 | 1.13 | 20 | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Mercury by EPA Method 245.1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID **MB-15816FB** | SampType: **MBLK** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33698** | |
| Client ID: **MBLKW** | Batch ID: **15826** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639833** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | ND | 0.100 | | | | | | | | | |

**NOTES:**
Filter Blank

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

| Sample ID **MB-15795** | SampType: **MBLK** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640128** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | ND | 50.0 | | | | | | | | | |
| Heavy Oil | ND | 100 | | | | | | | | | |
| Surr: 2-Fluorobiphenyl | 43.9 | | 80.07 | | 54.8 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 52.2 | | 80.07 | | 65.2 | 50 | 150 | | | | |

| Sample ID **LCS-15795** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640127** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 774 | 50.0 | 999.7 | 0 | 77.5 | 65 | 135 | | | | |
| Surr: 2-Fluorobiphenyl | 66.8 | | 79.97 | | 83.6 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 77.2 | | 79.97 | | 96.6 | 50 | 150 | | | | |

| Sample ID **1612278-001BDUP** | SampType: **DUP** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW1A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640108** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | ND | 49.8 | | | | | | 0 | | 30 | |
| Diesel Range Organics (C12-C24) | 480 | 49.8 | | | | | | 482.5 | 0.467 | 30 | |
| Heavy Oil | 1,080 | 99.5 | | | | | | 943.2 | 13.6 | 30 | |
| Surr: 2-Fluorobiphenyl | 61.7 | | 79.62 | | 77.5 | 50 | 150 | | 0 | | |
| Surr: o-Terphenyl | 69.6 | | 79.62 | | 87.4 | 50 | 150 | | 0 | | |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| Sample ID **1612278-005BMS** | SampType: **MS** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW2A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640113** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 695 | 50.3 | 1,005 | 0 | 69.1 | 65 | 135 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

| Sample ID | **1612278-005BMS** | SampType: **MS** | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15795** | | | | Analysis Date: **12/30/2016** | | SeqNo: **640113** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Surr: 2-Fluorobiphenyl | 64.6 | | 80.43 | | 80.3 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 70.2 | | 80.43 | | 87.3 | 50 | 150 | | | | |

| Sample ID | **1612278-005BMSD** | SampType: **MSD** | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15795** | | | | Analysis Date: **12/30/2016** | | SeqNo: **640114** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 663 | 50.1 | 1,002 | 0 | 66.1 | 65 | 135 | 694.8 | 4.77 | 30 | |
| Surr: 2-Fluorobiphenyl | 60.4 | | 80.14 | | 75.4 | 50 | 150 | | 0 | | |
| Surr: o-Terphenyl | 62.9 | | 80.14 | | 78.5 | 50 | 150 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Gases by RSK-175

| Sample ID | LCS-R33761 | SampType: | LCS | | | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R33761 | | | | | Analysis Date: | 1/6/2017 | SeqNo: | 641164 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Methane | | 0.410 | 0.00500 | 0.5000 | 0 | 82.0 | 80 | 120 | | | | |

| Sample ID | MB-R33761 | SampType: | MBLK | | | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | MBLKW | Batch ID: | R33761 | | | | | Analysis Date: | 1/6/2017 | SeqNo: | 641166 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Methane | | ND | 0.00500 | | | | | | | | | |

| Sample ID | 1612278-001AREP | SampType: | REP | | | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW1A | Batch ID: | R33761 | | | | | Analysis Date: | 1/6/2017 | SeqNo: | 641148 | |
| Analyte | | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Methane | | 6.29 | 0.00500 | | | | | | 6.293 | 0.119 | 30 | E |

**NOTES:**
E - Estimated value. The amount exceeds the linear working range of the instrument.

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

| Sample ID | **MB-15825** | SampType: | **MBLK** | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33768** |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: | **15825** | | | Analysis Date: | **1/5/2017** | SeqNo: | **641337** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | ND | 4.96 | | | | | | | | | |
| Phenol | ND | 1.98 | | | | | | | | | |
| 2-Chlorophenol | ND | 0.992 | | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 4.96 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| Benzyl alcohol | ND | 0.992 | | | | | | | | | |
| Bis(2-chloroethyl) ether | ND | 1.98 | | | | | | | | | |
| 2-Methylphenol (o-cresol) | ND | 0.992 | | | | | | | | | |
| Hexachloroethane | ND | 0.992 | | | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.992 | | | | | | | | | |
| Nitrobenzene | ND | 1.98 | | | | | | | | | |
| Isophorone | ND | 0.992 | | | | | | | | | |
| 4-Methylphenol (p-cresol) | ND | 0.992 | | | | | | | | | |
| 2-Nitrophenol | ND | 1.98 | | | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.992 | | | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.992 | | | | | | | | | |
| 2,4-Dichlorophenol | ND | 1.98 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.992 | | | | | | | | | |
| Naphthalene | ND | 0.496 | | | | | | | | | |
| 4-Chloroaniline | ND | 4.96 | | | | | | | | | |
| Hexachlorobutadiene | ND | 0.992 | | | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 4.96 | | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.496 | | | | | | | | | Q |
| 1-Methylnaphthalene | ND | 0.496 | | | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.992 | | | | | | | | | Q |
| 2,4,6-Trichlorophenol | ND | 1.98 | | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 1.98 | | | | | | | | | |
| 2-Chloronaphthalene | ND | 0.992 | | | | | | | | | |
| 2-Nitroaniline | ND | 4.96 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **MB-15825** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **MBLKW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641337**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.496 | | | | | | | | | |
| Dimethylphthalate | ND | 0.992 | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.992 | | | | | | | | | |
| Acenaphthylene | ND | 0.496 | | | | | | | | | |
| 2,4-Dinitrophenol | ND | 1.98 | | | | | | | | | Q |
| Dibenzofuran | ND | 0.992 | | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.992 | | | | | | | | | |
| 4-Nitrophenol | ND | 4.96 | | | | | | | | | |
| Fluorene | ND | 0.496 | | | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.992 | | | | | | | | | |
| Diethylphthalate | ND | 0.992 | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 4.96 | | | | | | | | | Q |
| 4-Bromophenyl phenyl ether | ND | 0.992 | | | | | | | | | |
| Hexachlorobenzene | ND | 0.992 | | | | | | | | | |
| Pentachlorophenol | ND | 1.98 | | | | | | | | | |
| Phenanthrene | ND | 0.496 | | | | | | | | | |
| Anthracene | ND | 0.496 | | | | | | | | | |
| Carbazole | ND | 4.96 | | | | | | | | | |
| Di-n-butyl phthalate | ND | 0.992 | | | | | | | | | |
| Fluoranthene | ND | 0.496 | | | | | | | | | |
| Pyrene | ND | 0.496 | | | | | | | | | |
| Benzyl Butylphthalate | ND | 0.992 | | | | | | | | | |
| bis(2-Ethylhexyl)adipate | ND | 0.992 | | | | | | | | | |
| Benz[a]anthracene | ND | 0.496 | | | | | | | | | |
| Chrysene | ND | 0.496 | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ND | 0.992 | | | | | | | | | |
| Di-n-octyl phthalate | ND | 0.992 | | | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.496 | | | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.496 | | | | | | | | | |
| Benzo[a]pyrene | ND | 0.496 | | | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.496 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **MB-15825** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **MBLKW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641337**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo (a,h) anthracene | ND | 0.496 | | | | | | | | | |
| Benzo (g,h,I) perylene | ND | 0.496 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 3.18 | | 3.967 | | 80.2 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.26 | | 1.983 | | 63.5 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 1.52 | | 1.983 | | 76.8 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 2.36 | | 3.967 | | 59.4 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.37 | | 1.983 | | 68.9 | 25.2 | 132 | | | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 2.70 | 5.02 | 4.012 | 0 | 67.3 | 25 | 94.9 | | | | |
| Phenol | 1.48 | 2.01 | 4.012 | 0 | 36.8 | 10 | 63.1 | | | | |
| 2-Chlorophenol | 2.04 | 1.00 | 4.012 | 0 | 50.8 | 25 | 112 | | | | |
| N-Nitrosodiphenylamine | N/A | 5.02 | 4.012 | 0 | 0 | 25 | 94.9 | | | | S |
| 1,3-Dichlorobenzene | 2.16 | 1.00 | 4.012 | 0 | 53.7 | 25 | 108 | | | | |
| 1,4-Dichlorobenzene | 2.17 | 1.00 | 4.012 | 0 | 54.1 | 25 | 110 | | | | |
| 1,2-Dichlorobenzene | 2.18 | 1.00 | 4.012 | 0 | 54.3 | 25 | 109 | | | | |
| Benzyl alcohol | 2.05 | 1.00 | 4.012 | 0 | 51.1 | 20 | 96.5 | | | | |
| Bis(2-chloroethyl) ether | 2.39 | 2.01 | 4.012 | 0 | 59.5 | 25 | 111 | | | | |
| 2-Methylphenol (o-cresol) | 1.95 | 1.00 | 4.012 | 0 | 48.5 | 25 | 101 | | | | |
| Hexachloroethane | 2.19 | 1.00 | 4.012 | 0 | 54.6 | 25 | 109 | | | | |
| N-Nitrosodi-n-propylamine | 2.98 | 1.00 | 4.012 | 0 | 74.4 | 25 | 122 | | | | |
| Nitrobenzene | 2.43 | 2.01 | 4.012 | 0 | 60.7 | 25 | 110 | | | | |
| Isophorone | 2.58 | 1.00 | 4.012 | 0 | 64.2 | 25 | 126 | | | | |
| 4-Methylphenol (p-cresol) | 1.02 | 1.00 | 2.006 | 0 | 51.0 | 5 | 100 | | | | |
| 2-Nitrophenol | 1.93 | 2.01 | 4.012 | 0 | 48.0 | 25 | 126 | | | | |
| 2,4-Dimethylphenol | 2.38 | 1.00 | 4.012 | 0 | 59.4 | 25 | 124 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroethoxy)methane | 2.49 | 1.00 | 4.012 | 0 | 62.2 | 25 | 121 | | | | |
| 2,4-Dichlorophenol | 2.51 | 2.01 | 4.012 | 0 | 62.6 | 29.1 | 110 | | | | |
| 1,2,4-Trichlorobenzene | 2.22 | 1.00 | 4.012 | 0 | 55.3 | 25 | 113 | | | | |
| Naphthalene | 2.45 | 0.502 | 4.012 | 0 | 61.1 | 25 | 115 | | | | |
| 4-Chloroaniline | 2.15 | 5.02 | 4.012 | 0 | 53.6 | 10 | 113 | | | | |
| Hexachlorobutadiene | 2.32 | 1.00 | 4.012 | 0 | 57.7 | 25 | 111 | | | | |
| 4-Chloro-3-methylphenol | 3.51 | 5.02 | 4.012 | 0 | 87.5 | 32.3 | 122 | | | | |
| 2-Methylnaphthalene | 2.59 | 0.502 | 4.012 | 0 | 64.6 | 25 | 119 | | | | |
| 1-Methylnaphthalene | 2.50 | 0.502 | 4.012 | 0 | 62.3 | 25 | 117 | | | | |
| Hexachlorocyclopentadiene | 2.53 | 1.00 | 4.012 | 0 | 63.0 | 25 | 125 | | | | |
| 2,4,6-Trichlorophenol | 2.48 | 2.01 | 4.012 | 0 | 61.7 | 25 | 133 | | | | |
| 2,4,5-Trichlorophenol | 2.86 | 2.01 | 4.012 | 0 | 71.3 | 25 | 125 | | | | |
| 2-Chloronaphthalene | 2.59 | 1.00 | 4.012 | 0 | 64.5 | 25 | 121 | | | | |
| 2-Nitroaniline | 3.38 | 5.02 | 4.012 | 0 | 84.3 | 25 | 121 | | | | |
| Acenaphthene | 2.72 | 0.502 | 4.012 | 0 | 67.8 | 25 | 120 | | | | |
| Dimethylphthalate | 2.86 | 1.00 | 4.012 | 0 | 71.4 | 25 | 133 | | | | |
| 2,6-Dinitrotoluene | 3.05 | 1.00 | 4.012 | 0 | 76.1 | 25 | 131 | | | | |
| Acenaphthylene | 2.67 | 0.502 | 4.012 | 0 | 66.5 | 25 | 128 | | | | |
| 2,4-Dinitrophenol | 3.25 | 2.01 | 8.025 | 0 | 40.5 | 10 | 121 | | | | |
| Dibenzofuran | 2.76 | 1.00 | 4.012 | 0 | 68.8 | 25 | 121 | | | | |
| 2,4-Dinitrotoluene | 3.17 | 1.00 | 4.012 | 0 | 79.0 | 25 | 132 | | | | |
| 4-Nitrophenol | 2.55 | 5.02 | 4.012 | 0 | 63.6 | 5 | 141 | | | | |
| Fluorene | 2.70 | 0.502 | 4.012 | 0 | 67.3 | 25 | 127 | | | | |
| 4-Chlorophenyl phenyl ether | 2.66 | 1.00 | 4.012 | 0 | 66.3 | 25 | 124 | | | | |
| Diethylphthalate | 3.02 | 1.00 | 4.012 | 0 | 75.3 | 31.3 | 142 | | | | |
| 4,6-Dinitro-2-methylphenol | 2.72 | 5.02 | 4.012 | 0 | 67.7 | 10 | 118 | | | | |
| 4-Bromophenyl phenyl ether | 2.63 | 1.00 | 4.012 | 0 | 65.5 | 25 | 130 | | | | |
| Hexachlorobenzene | 2.82 | 1.00 | 4.012 | 0 | 70.3 | 29 | 120 | | | | |
| Pentachlorophenol | 2.55 | 2.01 | 4.012 | 0 | 63.6 | 10 | 117 | | | | |
| Phenanthrene | 2.91 | 0.502 | 4.012 | 0 | 72.5 | 32.6 | 104 | | | | |
| Anthracene | 2.81 | 0.502 | 4.012 | 0 | 69.9 | 27.7 | 134 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbazole | 3.06 | 5.02 | 4.012 | 0 | 76.2 | 27.9 | 150 | | | | |
| Di-n-butyl phthalate | 3.30 | 1.00 | 4.012 | 0 | 82.3 | 28.6 | 121 | | | | |
| Fluoranthene | 3.04 | 0.502 | 4.012 | 0 | 75.8 | 34.8 | 143 | | | | |
| Pyrene | 2.99 | 0.502 | 4.012 | 0 | 74.5 | 31.9 | 109 | | | | |
| Benzyl Butylphthalate | 3.56 | 1.00 | 4.012 | 0 | 88.8 | 43.8 | 119 | | | | |
| bis(2-Ethylhexyl)adipate | 3.20 | 1.00 | 4.012 | 0 | 79.7 | 38.1 | 140 | | | | |
| Benz[a]anthracene | 3.17 | 0.502 | 4.012 | 0 | 78.9 | 27.2 | 132 | | | | |
| Chrysene | 3.05 | 0.502 | 4.012 | 0 | 75.9 | 31.3 | 107 | | | | |
| Bis(2-ethylhexyl) phthalate | 3.35 | 1.00 | 4.012 | 0 | 83.6 | 36.2 | 123 | | | | |
| Di-n-octyl phthalate | 3.49 | 1.00 | 4.012 | 0 | 87.0 | 40.1 | 149 | | | | |
| Benzo (b) fluoranthene | 3.47 | 0.502 | 4.012 | 0 | 86.4 | 32.5 | 119 | | | | |
| Benzo (k) fluoranthene | 3.46 | 0.502 | 4.012 | 0 | 86.3 | 25 | 144 | | | | |
| Benzo[a]pyrene | 3.58 | 0.502 | 4.012 | 0 | 89.3 | 24.9 | 125 | | | | |
| Indeno (1,2,3-cd) pyrene | 3.40 | 0.502 | 4.012 | 0 | 84.6 | 25 | 127 | | | | |
| Dibenzo (a,h) anthracene | 3.50 | 0.502 | 4.012 | 0 | 87.1 | 25 | 132 | | | | |
| Benzo (g,h,I) perylene | 3.68 | 0.502 | 4.012 | 0 | 91.8 | 25 | 133 | | | | |
| Surr: 2,4,6-Tribromophenol | 3.52 | | 4.012 | | 87.7 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.06 | | 2.006 | | 52.7 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 0.996 | | 2.006 | | 49.7 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 1.89 | | 4.012 | | 47.2 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.16 | | 2.006 | | 57.7 | 25.2 | 132 | | | | |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | ND | 5.02 | | | | | | 0 | | 50 | |
| 2-Chlorophenol | ND | 1.00 | | | | | | 0 | | 50 | |
| N-Nitrosodiphenylamine | ND | 5.02 | | | | | | 0 | | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Benzyl alcohol | ND | 1.00 | | | | | | 0 | | 50 | |
| Bis(2-chloroethyl) ether | ND | 2.01 | | | | | | 0 | | 50 | |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | | | | | 0 | | 50 | |
| Hexachloroethane | ND | 1.00 | | | | | | 0 | | 50 | |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | | | | | 0 | | 50 | |
| Nitrobenzene | 4.67 | 2.01 | | | | | | 5.506 | 16.4 | 50 | |
| Isophorone | 1.55 | 1.00 | | | | | | 1.631 | 5.34 | 50 | |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | | | | | 0 | | 50 | |
| 2-Nitrophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2,4-Dimethylphenol | ND | 1.00 | | | | | | 0 | | 50 | |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | | | | | 0 | | 50 | |
| 2,4-Dichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Naphthalene | ND | 0.502 | | | | | | 0 | | 50 | |
| 4-Chloroaniline | ND | 5.02 | | | | | | 0 | | 50 | |
| Hexachlorobutadiene | ND | 1.00 | | | | | | 0 | | 50 | |
| 4-Chloro-3-methylphenol | ND | 5.02 | | | | | | 0 | | 50 | |
| 2-Methylnaphthalene | 0.820 | 0.502 | | | | | | 1.016 | 21.4 | 50 | Q |
| 1-Methylnaphthalene | ND | 0.502 | | | | | | 0.6932 | 40.8 | 50 | |
| Hexachlorocyclopentadiene | ND | 1.00 | | | | | | 0 | | 50 | Q |
| 2,4,6-Trichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2,4,5-Trichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2-Chloronaphthalene | ND | 1.00 | | | | | | 0 | | 50 | |
| 2-Nitroaniline | ND | 5.02 | | | | | | 0 | | 50 | |
| Acenaphthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Dimethylphthalate | 3.15 | 1.00 | | | | | | 3.280 | 4.11 | 50 | |
| 2,6-Dinitrotoluene | ND | 1.00 | | | | | | 0 | | 50 | |
| Acenaphthylene | ND | 0.502 | | | | | | 0 | | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrophenol | ND | 2.01 | | | | | | 0 | | 50 | Q |
| Dibenzofuran | ND | 1.00 | | | | | | 0 | | 50 | |
| 2,4-Dinitrotoluene | ND | 1.00 | | | | | | 0 | | 50 | |
| 4-Nitrophenol | ND | 5.02 | | | | | | 0 | | 50 | |
| Fluorene | ND | 0.502 | | | | | | 0 | | 50 | |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | | | | | 0 | | 50 | |
| Diethylphthalate | 3.13 | 1.00 | | | | | | 3.684 | 16.3 | 50 | |
| 4,6-Dinitro-2-methylphenol | ND | 5.02 | | | | | | 0 | | 50 | Q |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | | | | | 0 | | 50 | |
| Hexachlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Pentachlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| Phenanthrene | 1.23 | 0.502 | | | | | | 1.365 | 10.0 | 50 | |
| Anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Carbazole | ND | 5.02 | | | | | | 0 | | 50 | |
| Di-n-butyl phthalate | ND | 1.00 | | | | | | 0 | | 50 | |
| Fluoranthene | 1.25 | 0.502 | | | | | | 1.344 | 7.46 | 50 | |
| Pyrene | 1.03 | 0.502 | | | | | | 1.039 | 0.893 | 50 | |
| Benzyl Butylphthalate | ND | 1.00 | | | | | | 0 | | 50 | |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | | | | | 0 | | 50 | |
| Benz[a]anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Chrysene | ND | 0.502 | | | | | | 0 | | 50 | |
| Di-n-octyl phthalate | 1.41 | 1.00 | | | | | | 1.261 | 11.4 | 50 | |
| Benzo (b) fluoranthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo (k) fluoranthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo[a]pyrene | ND | 0.502 | | | | | | 0 | | 50 | |
| Indeno (1,2,3-cd) pyrene | ND | 0.502 | | | | | | 0 | | 50 | |
| Dibenzo (a,h) anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo (g,h,I) perylene | ND | 0.502 | | | | | | 0 | | 50 | |
| Surr: 2,4,6-Tribromophenol | 4.13 | | 4.019 | | 103 | 5 | 127 | | 0 | | |
| Surr: 2-Fluorobiphenyl | 1.31 | | 2.009 | | 65.1 | 24.1 | 139 | | 0 | | |
| Surr: Nitrobenzene-d5 | 1.57 | | 2.009 | | 77.9 | 21.9 | 139 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Phenol-d6 | 4.31 | | 4.019 | | 107 | 10.3 | 128 | | 0 | | |
| Surr: p-Terphenyl | 1.48 | | 2.009 | | 73.4 | 25.2 | 132 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 3.75 | 5.03 | 4.025 | 0.2076 | 87.9 | 5 | 159 | | | | |
| Phenol | 24.6 | 2.01 | 4.025 | 21.53 | 77.1 | 5 | 94.5 | | | | |
| 2-Chlorophenol | 3.16 | 1.01 | 4.025 | 0 | 78.4 | 10.4 | 100 | | | | |
| N-Nitrosodiphenylamine | N/A | 5.03 | 4.025 | 0 | 0 | 5 | 66.4 | | | | S |
| 1,3-Dichlorobenzene | 2.92 | 1.01 | 4.025 | 0 | 72.5 | 23 | 94.8 | | | | |
| 1,4-Dichlorobenzene | 2.82 | 1.01 | 4.025 | 0 | 70.1 | 23.8 | 95.2 | | | | |
| 1,2-Dichlorobenzene | 2.84 | 1.01 | 4.025 | 0 | 70.6 | 25.5 | 96.9 | | | | |
| Benzyl alcohol | 4.23 | 1.01 | 4.025 | 0 | 105 | 5 | 139 | | | | |
| Bis(2-chloroethyl) ether | 4.08 | 2.01 | 4.025 | 0 | 101 | 22 | 109 | | | | |
| 2-Methylphenol (o-cresol) | 4.33 | 1.01 | 4.025 | 0 | 107 | 5 | 106 | | | | S |
| Hexachloroethane | 2.83 | 1.01 | 4.025 | 0 | 70.4 | 9.62 | 104 | | | | |
| N-Nitrosodi-n-propylamine | 5.01 | 1.01 | 4.025 | 0 | 125 | 23.7 | 124 | | | | S |
| Nitrobenzene | 8.89 | 2.01 | 4.025 | 5.032 | 95.9 | 10.6 | 137 | | | | |
| Isophorone | 5.31 | 1.01 | 4.025 | 1.400 | 97.1 | 22.9 | 124 | | | | |
| 4-Methylphenol (p-cresol) | 0.883 | 1.01 | 2.012 | 0 | 43.9 | 5 | 119 | | | | |
| 2-Nitrophenol | 3.68 | 2.01 | 4.025 | 0 | 91.4 | 13.6 | 125 | | | | |
| 2,4-Dimethylphenol | 5.78 | 1.01 | 4.025 | 0 | 144 | 5 | 126 | | | | S |
| Bis(2-chloroethoxy)methane | 3.72 | 1.01 | 4.025 | 0 | 92.4 | 27 | 115 | | | | |
| 2,4-Dichlorophenol | 0.261 | 2.01 | 4.025 | 0 | 6.49 | 12.1 | 126 | | | | S |
| 1,2,4-Trichlorobenzene | 3.00 | 1.01 | 4.025 | 0.01534 | 74.2 | 25 | 110 | | | | |
| Naphthalene | 4.72 | 0.503 | 4.025 | 0 | 117 | 23.5 | 108 | | | | S |
| 4-Chloroaniline | 1.36 | 5.03 | 4.025 | 0 | 33.8 | 5 | 110 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | 3.07 | 1.01 | 4.025 | 0 | 76.4 | 23.6 | 98.8 | | | | |
| 4-Chloro-3-methylphenol | 1.72 | 5.03 | 4.025 | 0 | 42.8 | 5 | 139 | | | | |
| 2-Methylnaphthalene | 3.49 | 0.503 | 4.025 | 0.5083 | 74.2 | 26.1 | 118 | | | | |
| 1-Methylnaphthalene | 3.43 | 0.503 | 4.025 | 0.3337 | 76.9 | 27.5 | 116 | | | | |
| Hexachlorocyclopentadiene | ND | 1.01 | 4.025 | 0 | 0 | 5 | 126 | | | | S |
| 2,4,6-Trichlorophenol | 3.71 | 2.01 | 4.025 | 0 | 92.3 | 10.5 | 124 | | | | |
| 2,4,5-Trichlorophenol | 4.06 | 2.01 | 4.025 | 0 | 101 | 5 | 144 | | | | |
| 2-Chloronaphthalene | 3.29 | 1.01 | 4.025 | 0 | 81.8 | 27 | 117 | | | | |
| 2-Nitroaniline | 4.94 | 5.03 | 4.025 | 0 | 123 | 5.48 | 142 | | | | |
| Acenaphthene | 3.81 | 0.503 | 4.025 | 0 | 94.7 | 29.3 | 117 | | | | |
| Dimethylphthalate | 6.15 | 1.01 | 4.025 | 2.846 | 82.0 | 24 | 132 | | | | |
| 2,6-Dinitrotoluene | 3.80 | 1.01 | 4.025 | 0 | 94.4 | 22 | 129 | | | | |
| Acenaphthylene | 3.18 | 0.503 | 4.025 | 0 | 79.0 | 25.1 | 121 | | | | |
| 2,4-Dinitrophenol | ND | 2.01 | 8.049 | 0 | 0 | 5 | 172 | | | | S |
| Dibenzofuran | 3.85 | 1.01 | 4.025 | 0 | 95.7 | 27.8 | 116 | | | | |
| 2,4-Dinitrotoluene | 4.10 | 1.01 | 4.025 | 0 | 102 | 24.4 | 124 | | | | |
| 4-Nitrophenol | ND | 5.03 | 4.025 | 0 | 0 | 5 | 120 | | | | S |
| Fluorene | 3.65 | 0.503 | 4.025 | 0.1396 | 87.2 | 27.6 | 123 | | | | |
| 4-Chlorophenyl phenyl ether | 3.59 | 1.01 | 4.025 | 0 | 89.3 | 28.6 | 117 | | | | |
| Diethylphthalate | 7.43 | 1.01 | 4.025 | 3.324 | 102 | 27.4 | 137 | | | | |
| 4,6-Dinitro-2-methylphenol | 1.92 | 5.03 | 4.025 | 0 | 47.7 | 5 | 134 | | | | |
| 4-Bromophenyl phenyl ether | 3.81 | 1.01 | 4.025 | 0 | 94.7 | 32.2 | 120 | | | | |
| Hexachlorobenzene | 3.54 | 1.01 | 4.025 | 0 | 87.8 | 28.3 | 114 | | | | |
| Pentachlorophenol | 6.12 | 2.01 | 4.025 | 0 | 152 | 5 | 153 | | | | |
| Phenanthrene | 3.80 | 0.503 | 4.025 | 0.2654 | 87.9 | 29.7 | 120 | | | | |
| Anthracene | 3.67 | 0.503 | 4.025 | 0 | 91.2 | 22.1 | 125 | | | | |
| Carbazole | 3.89 | 5.03 | 4.025 | 0.1863 | 92.1 | 31 | 133 | | | | |
| Di-n-butyl phthalate | 4.87 | 1.01 | 4.025 | 0.8816 | 99.0 | 34.3 | 138 | | | | |
| Fluoranthene | 3.70 | 0.503 | 4.025 | 0.3242 | 83.9 | 33.3 | 137 | | | | |
| Pyrene | 3.55 | 0.503 | 4.025 | 0.1698 | 83.9 | 31.4 | 132 | | | | |
| Benzyl Butylphthalate | 4.28 | 1.01 | 4.025 | 0 | 106 | 37.7 | 159 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| bis(2-Ethylhexyl)adipate | 3.05 | 1.01 | 4.025 | 0 | 75.7 | 5 | 159 | | | | |
| Benz[a]anthracene | 3.52 | 0.503 | 4.025 | 0.08903 | 85.1 | 26.5 | 136 | | | | |
| Chrysene | 3.29 | 0.503 | 4.025 | 0.1221 | 78.8 | 22.2 | 126 | | | | |
| Bis(2-ethylhexyl) phthalate | 7.11 | 1.01 | 4.025 | 4.277 | 70.3 | 5 | 162 | | | | |
| Di-n-octyl phthalate | 3.86 | 1.01 | 4.025 | 0.3835 | 86.3 | 5 | 175 | | | | |
| Benzo (b) fluoranthene | 3.86 | 0.503 | 4.025 | 0.08677 | 93.7 | 20 | 139 | | | | |
| Benzo (k) fluoranthene | 3.17 | 0.503 | 4.025 | 0.09953 | 76.3 | 13 | 134 | | | | |
| Benzo[a]pyrene | 3.48 | 0.503 | 4.025 | 0.06363 | 84.9 | 5 | 144 | | | | |
| Indeno (1,2,3-cd) pyrene | 2.70 | 0.503 | 4.025 | 0.03918 | 66.2 | 5 | 144 | | | | |
| Dibenzo (a,h) anthracene | 2.75 | 0.503 | 4.025 | 0.02940 | 67.6 | 10.3 | 145 | | | | |
| Benzo (g,h,I) perylene | 2.68 | 0.503 | 4.025 | 0.04867 | 65.3 | 5 | 135 | | | | |
| Surr: 2,4,6-Tribromophenol | 4.49 | | 4.025 | | 112 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.21 | | 2.012 | | 60.3 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 1.91 | | 2.012 | | 95.1 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 4.42 | | 4.025 | | 110 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.31 | | 2.012 | | 65.1 | 25.2 | 132 | | | | |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 3.45 | 4.95 | 3.959 | 0.2076 | 82.0 | 5 | 159 | 0 | | 0 | |
| Phenol | 24.1 | 1.98 | 3.959 | 21.53 | 64.8 | 5 | 94.5 | 24.63 | 2.20 | 50 | |
| 2-Chlorophenol | 2.89 | 0.990 | 3.959 | 0 | 73.1 | 10.4 | 100 | 3.156 | 8.67 | 50 | |
| N-Nitrosodiphenylamine | N/A | 4.95 | 3.959 | 0 | 0 | 5 | 66.4 | 0 | | 0 | S |
| 1,3-Dichlorobenzene | 2.58 | 0.990 | 3.959 | 0 | 65.2 | 23 | 94.8 | 2.920 | 12.3 | 50 | |
| 1,4-Dichlorobenzene | 2.42 | 0.990 | 3.959 | 0 | 61.1 | 23.8 | 95.2 | 2.821 | 15.3 | 50 | |
| 1,2-Dichlorobenzene | 2.48 | 0.990 | 3.959 | 0 | 62.7 | 25.5 | 96.9 | 2.841 | 13.4 | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzyl alcohol | 3.99 | 0.990 | 3.959 | 0 | 101 | 5 | 139 | 4.230 | 5.72 | 50 | |
| Bis(2-chloroethyl) ether | 4.48 | 1.98 | 3.959 | 0 | 113 | 22 | 109 | 4.078 | 9.40 | 50 | S |
| 2-Methylphenol (o-cresol) | 3.88 | 0.990 | 3.959 | 0 | 98.0 | 5 | 106 | 4.326 | 10.9 | 50 | |
| Hexachloroethane | 2.46 | 0.990 | 3.959 | 0 | 62.2 | 9.62 | 104 | 2.834 | 14.1 | 50 | |
| N-Nitrosodi-n-propylamine | 4.70 | 0.990 | 3.959 | 0 | 119 | 23.7 | 124 | 5.013 | 6.53 | 50 | |
| Nitrobenzene | 8.51 | 1.98 | 3.959 | 5.032 | 87.9 | 10.6 | 137 | 8.892 | 4.35 | 50 | |
| Isophorone | 4.54 | 0.990 | 3.959 | 1.400 | 79.2 | 22.9 | 124 | 5.309 | 15.7 | 50 | |
| 4-Methylphenol (p-cresol) | 0.868 | 0.990 | 1.979 | 0 | 43.8 | 5 | 119 | 0 | | 50 | |
| 2-Nitrophenol | 3.27 | 1.98 | 3.959 | 0 | 82.6 | 13.6 | 125 | 3.677 | 11.7 | 50 | |
| 2,4-Dimethylphenol | 5.03 | 0.990 | 3.959 | 0 | 127 | 5 | 126 | 5.777 | 13.8 | 50 | S |
| Bis(2-chloroethoxy)methane | 3.45 | 0.990 | 3.959 | 0 | 87.2 | 27 | 115 | 3.719 | 7.47 | 50 | |
| 2,4-Dichlorophenol | 0.190 | 1.98 | 3.959 | 0 | 4.81 | 12.1 | 126 | 0 | | 50 | S |
| 1,2,4-Trichlorobenzene | 2.67 | 0.990 | 3.959 | 0.01534 | 67.1 | 25 | 110 | 3.004 | 11.6 | 50 | |
| Naphthalene | 3.94 | 0.495 | 3.959 | 0 | 99.6 | 23.5 | 108 | 4.716 | 17.9 | 50 | |
| 4-Chloroaniline | 1.10 | 4.95 | 3.959 | 0 | 27.7 | 5 | 110 | 0 | | 50 | |
| Hexachlorobutadiene | 2.87 | 0.990 | 3.959 | 0 | 72.4 | 23.6 | 98.8 | 3.073 | 6.98 | 50 | |
| 4-Chloro-3-methylphenol | 1.21 | 4.95 | 3.959 | 0 | 30.5 | 5 | 139 | 0 | | 50 | |
| 2-Methylnaphthalene | 3.22 | 0.495 | 3.959 | 0.5083 | 68.6 | 26.1 | 118 | 3.493 | 8.05 | 50 | |
| 1-Methylnaphthalene | 3.39 | 0.495 | 3.959 | 0.3337 | 77.2 | 27.5 | 116 | 3.430 | 1.19 | 50 | |
| Hexachlorocyclopentadiene | ND | 0.990 | 3.959 | 0 | 0 | 5 | 126 | 0 | | 50 | S |
| 2,4,6-Trichlorophenol | 3.77 | 1.98 | 3.959 | 0 | 95.2 | 10.5 | 124 | 3.714 | 1.46 | 50 | |
| 2,4,5-Trichlorophenol | 3.89 | 1.98 | 3.959 | 0 | 98.3 | 5 | 144 | 4.065 | 4.41 | 50 | |
| 2-Chloronaphthalene | 2.97 | 0.990 | 3.959 | 0 | 75.1 | 27 | 117 | 3.292 | 10.2 | 50 | |
| 2-Nitroaniline | 5.02 | 4.95 | 3.959 | 0 | 127 | 5.48 | 142 | 4.940 | 1.52 | 50 | |
| Acenaphthene | 3.61 | 0.495 | 3.959 | 0 | 91.1 | 29.3 | 117 | 3.812 | 5.56 | 50 | |
| Dimethylphthalate | 6.08 | 0.990 | 3.959 | 2.846 | 81.8 | 24 | 132 | 6.146 | 1.04 | 50 | |
| 2,6-Dinitrotoluene | 3.87 | 0.990 | 3.959 | 0 | 97.7 | 22 | 129 | 3.800 | 1.79 | 50 | |
| Acenaphthylene | 2.84 | 0.495 | 3.959 | 0 | 71.6 | 25.1 | 121 | 3.180 | 11.4 | 50 | |
| 2,4-Dinitrophenol | ND | 1.98 | 7.917 | 0 | 0 | 5 | 172 | 0 | | 50 | S |
| Dibenzofuran | 3.38 | 0.990 | 3.959 | 0 | 85.3 | 27.8 | 116 | 3.852 | 13.2 | 50 | |
| 2,4-Dinitrotoluene | 3.90 | 0.990 | 3.959 | 0 | 98.5 | 24.4 | 124 | 4.096 | 4.88 | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 4.95 | 3.959 | 0 | 0 | 5 | 120 | 0 | | 50 | S |
| Fluorene | 3.10 | 0.495 | 3.959 | 0.1396 | 74.8 | 27.6 | 123 | 3.648 | 16.2 | 50 | |
| 4-Chlorophenyl phenyl ether | 2.96 | 0.990 | 3.959 | 0 | 74.8 | 28.6 | 117 | 3.593 | 19.3 | 50 | |
| Diethylphthalate | 6.57 | 0.990 | 3.959 | 3.324 | 82.0 | 27.4 | 137 | 7.434 | 12.4 | 50 | |
| 4,6-Dinitro-2-methylphenol | 1.08 | 4.95 | 3.959 | 0 | 27.3 | 5 | 134 | 0 | | 50 | |
| 4-Bromophenyl phenyl ether | 3.35 | 0.990 | 3.959 | 0 | 84.6 | 32.2 | 120 | 3.810 | 12.8 | 50 | |
| Hexachlorobenzene | 3.07 | 0.990 | 3.959 | 0 | 77.6 | 28.3 | 114 | 3.535 | 14.0 | 50 | |
| Pentachlorophenol | 4.89 | 1.98 | 3.959 | 0 | 124 | 5 | 153 | 6.118 | 22.3 | 50 | |
| Phenanthrene | 3.66 | 0.495 | 3.959 | 0.2654 | 85.8 | 29.7 | 120 | 3.801 | 3.78 | 50 | |
| Anthracene | 3.33 | 0.495 | 3.959 | 0 | 84.1 | 22.1 | 125 | 3.669 | 9.68 | 50 | |
| Carbazole | 3.47 | 4.95 | 3.959 | 0.1863 | 82.9 | 31 | 133 | 0 | | 50 | |
| Di-n-butyl phthalate | 4.22 | 0.990 | 3.959 | 0.8816 | 84.3 | 34.3 | 138 | 4.866 | 14.3 | 50 | |
| Fluoranthene | 3.51 | 0.495 | 3.959 | 0.3242 | 80.5 | 33.3 | 137 | 3.700 | 5.24 | 50 | |
| Pyrene | 3.36 | 0.495 | 3.959 | 0.1698 | 80.5 | 31.4 | 132 | 3.547 | 5.55 | 50 | |
| Benzyl Butylphthalate | 3.91 | 0.990 | 3.959 | 0 | 98.9 | 37.7 | 159 | 4.278 | 8.87 | 50 | |
| bis(2-Ethylhexyl)adipate | 2.82 | 0.990 | 3.959 | 0 | 71.3 | 5 | 159 | 3.047 | 7.68 | 50 | |
| Benz[a]anthracene | 3.32 | 0.495 | 3.959 | 0.08903 | 81.6 | 26.5 | 136 | 3.515 | 5.73 | 50 | |
| Chrysene | 3.09 | 0.495 | 3.959 | 0.1221 | 74.9 | 22.2 | 126 | 3.294 | 6.56 | 50 | |
| Bis(2-ethylhexyl) phthalate | 6.86 | 0.990 | 3.959 | 4.277 | 65.3 | 5 | 162 | 7.105 | 3.46 | 50 | |
| Di-n-octyl phthalate | 3.47 | 0.990 | 3.959 | 0.3835 | 78.0 | 5 | 175 | 3.858 | 10.6 | 50 | |
| Benzo (b) fluoranthene | 3.36 | 0.495 | 3.959 | 0.08677 | 82.6 | 20 | 139 | 3.859 | 13.9 | 50 | |
| Benzo (k) fluoranthene | 2.84 | 0.495 | 3.959 | 0.09953 | 69.2 | 13 | 134 | 3.171 | 11.0 | 50 | |
| Benzo[a]pyrene | 3.36 | 0.495 | 3.959 | 0.06363 | 83.2 | 5 | 144 | 3.479 | 3.59 | 50 | |
| Indeno (1,2,3-cd) pyrene | 2.21 | 0.495 | 3.959 | 0.03918 | 54.7 | 5 | 144 | 2.702 | 20.2 | 50 | |
| Dibenzo (a,h) anthracene | 2.26 | 0.495 | 3.959 | 0.02940 | 56.2 | 10.3 | 145 | 2.750 | 19.7 | 50 | |
| Benzo (g,h,I) perylene | 1.96 | 0.495 | 3.959 | 0.04867 | 48.2 | 5 | 135 | 2.676 | 31.1 | 50 | |
| Surr: 2,4,6-Tribromophenol | 4.15 | | 3.959 | | 105 | 5 | 127 | | 0 | | |
| Surr: 2-Fluorobiphenyl | 1.24 | | 1.979 | | 62.6 | 24.1 | 139 | | 0 | | |
| Surr: Nitrobenzene-d5 | 1.87 | | 1.979 | | 94.6 | 21.9 | 139 | | 0 | | |
| Surr: Phenol-d6 | 4.19 | | 3.959 | | 106 | 10.3 | 128 | | 0 | | |
| Surr: p-Terphenyl | 1.34 | | 1.979 | | 67.5 | 25.2 | 132 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **1612293-003FMSD** | SampType: **MSD** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33768** | | | |
| Client ID: **BATCH** | Batch ID: **15825** | | | | | Analysis Date: **1/5/2017** | | SeqNo: **641346** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Gasoline by NWTPH-Gx

| Sample ID | LCS-15802 | SampType: | LCS | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640498 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | 523 | 50.0 | 500.0 | 0 | 105 | 65 | 135 | | | | |
| Surr: Toluene-d8 | 25.4 | | 25.00 | | 101 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 24.6 | | 25.00 | | 98.3 | 65 | 135 | | | | |

| Sample ID | LCSD-15802 | SampType: | LCS | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640499 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | 505 | 50.0 | 500.0 | 0 | 101 | 65 | 135 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 24.5 | | 25.00 | | 97.9 | 65 | 135 | | | | |

| Sample ID | MB-15802 | SampType: | MBLK | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | MBLKW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640500 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | | | | |
| Surr: Toluene-d8 | 25.6 | | 25.00 | | 102 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 23.9 | | 25.00 | | 95.5 | 65 | 135 | | | | |

| Sample ID | 1612278-011ADUP | SampType: | DUP | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW5B | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640491 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | 0 | | 30 | |
| Surr: Toluene-d8 | 25.1 | | 25.00 | | 100 | 65 | 135 | | 0 | | |
| Surr: 4-Bromofluorobenzene | 24.3 | | 25.00 | | 97.1 | 65 | 135 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Gasoline by NWTPH-Gx

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33734**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640494**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | 0 | | 30 | |
| Surr: Toluene-d8 | 25.3 | | 25.00 | | 101 | 65 | 135 | | 0 | | |
| Surr: 4-Bromofluorobenzene | 24.1 | | 25.00 | | 96.5 | 65 | 135 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640458**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | 16.2 | 1.00 | 20.00 | 0 | 80.8 | 43 | 136 | | | | |
| Chloromethane | 19.7 | 1.00 | 20.00 | 0 | 98.7 | 43.9 | 139 | | | | |
| Vinyl chloride | 20.8 | 0.200 | 20.00 | 0 | 104 | 53.6 | 139 | | | | |
| Bromomethane | 23.3 | 1.00 | 20.00 | 0 | 116 | 42.5 | 152 | | | | |
| Trichlorofluoromethane (CFC-11) | 20.7 | 1.00 | 20.00 | 0 | 103 | 43.5 | 149 | | | | |
| Chloroethane | 22.1 | 1.00 | 20.00 | 0 | 111 | 53 | 141 | | | | |
| 1,1-Dichloroethene | 21.6 | 1.00 | 20.00 | 0 | 108 | 65.6 | 136 | | | | |
| Methylene chloride | 22.1 | 1.00 | 20.00 | 0 | 110 | 67.1 | 131 | | | | |
| trans-1,2-Dichloroethene | 21.9 | 1.00 | 20.00 | 0 | 109 | 71.7 | 129 | | | | |
| Methyl tert-butyl ether (MTBE) | 17.6 | 1.00 | 20.00 | 0 | 88.0 | 67.7 | 131 | | | | |
| 1,1-Dichloroethane | 22.2 | 1.00 | 20.00 | 0 | 111 | 67.9 | 134 | | | | |
| 2,2-Dichloropropane | 13.6 | 2.00 | 20.00 | 0 | 67.8 | 33.7 | 152 | | | | |
| cis-1,2-Dichloroethene | 21.8 | 1.00 | 20.00 | 0 | 109 | 70.2 | 139 | | | | |
| Chloroform | 21.5 | 1.00 | 20.00 | 0 | 108 | 66.3 | 131 | | | | |
| 1,1,1-Trichloroethane (TCA) | 20.5 | 1.00 | 20.00 | 0 | 103 | 71 | 131 | | | | |
| 1,1-Dichloropropene | 22.0 | 1.00 | 20.00 | 0 | 110 | 69.9 | 124 | | | | |
| Carbon tetrachloride | 19.8 | 1.00 | 20.00 | 0 | 98.9 | 66.2 | 134 | | | | |
| 1,2-Dichloroethane (EDC) | 21.0 | 1.00 | 20.00 | 0 | 105 | 67 | 126 | | | | |
| Benzene | 22.2 | 1.00 | 20.00 | 0 | 111 | 69.3 | 132 | | | | |
| Trichloroethene (TCE) | 22.0 | 0.500 | 20.00 | 0 | 110 | 65.2 | 136 | | | | |
| 1,2-Dichloropropane | 22.3 | 1.00 | 20.00 | 0 | 112 | 70.5 | 130 | | | | |
| Bromodichloromethane | 19.4 | 1.00 | 20.00 | 0 | 97.0 | 67.2 | 137 | | | | |
| Dibromomethane | 19.6 | 1.00 | 20.00 | 0 | 98.0 | 75.5 | 126 | | | | |
| cis-1,3-Dichloropropene | 18.1 | 1.00 | 20.00 | 0 | 90.5 | 62.6 | 137 | | | | |
| Toluene | 22.3 | 1.00 | 20.00 | 0 | 111 | 61.3 | 145 | | | | |
| trans-1,3-Dichloropropylene | 16.0 | 1.00 | 20.00 | 0 | 80.2 | 56.5 | 163 | | | | |
| 1,1,2-Trichloroethane | 21.4 | 1.00 | 20.00 | 0 | 107 | 71.7 | 131 | | | | |
| 1,3-Dichloropropane | 20.6 | 1.00 | 20.00 | 0 | 103 | 73.5 | 127 | | | | |
| Tetrachloroethene (PCE) | 21.3 | 1.00 | 20.00 | 0 | 107 | 47.5 | 147 | | | | |
| Dibromochloromethane | 17.4 | 1.00 | 20.00 | 0 | 87.2 | 67.2 | 134 | | | | |
| 1,2-Dibromoethane (EDB) | 19.4 | 0.0600 | 20.00 | 0 | 96.9 | 73.6 | 125 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640458**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 73.9 | 126 | | | | |
| 1,1,1,2-Tetrachloroethane | 19.6 | 1.00 | 20.00 | 0 | 97.9 | 76.8 | 124 | | | | |
| Ethylbenzene | 21.9 | 1.00 | 20.00 | 0 | 109 | 72 | 130 | | | | |
| m,p-Xylene | 42.8 | 1.00 | 40.00 | 0 | 107 | 70.3 | 134 | | | | |
| o-Xylene | 21.3 | 1.00 | 20.00 | 0 | 107 | 72.1 | 131 | | | | |
| Styrene | 21.0 | 1.00 | 20.00 | 0 | 105 | 64.3 | 140 | | | | |
| Isopropylbenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 73.9 | 128 | | | | |
| Bromoform | 17.0 | 1.00 | 20.00 | 0 | 85.2 | 55.3 | 141 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.6 | 1.00 | 20.00 | 0 | 93.0 | 62.9 | 132 | | | | |
| n-Propylbenzene | 21.6 | 1.00 | 20.00 | 0 | 108 | 74.5 | 127 | | | | |
| Bromobenzene | 20.1 | 1.00 | 20.00 | 0 | 101 | 71 | 131 | | | | |
| 1,3,5-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 73.1 | 128 | | | | |
| 2-Chlorotoluene | 21.4 | 1.00 | 20.00 | 0 | 107 | 70.8 | 130 | | | | |
| 4-Chlorotoluene | 21.1 | 1.00 | 20.00 | 0 | 106 | 70.1 | 131 | | | | |
| tert-Butylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 68.2 | 131 | | | | |
| 1,2,3-Trichloropropane | 18.5 | 1.00 | 20.00 | 0 | 92.6 | 67.7 | 131 | | | | |
| 1,2,4-Trichlorobenzene | 19.5 | 2.00 | 20.00 | 0 | 97.4 | 51.8 | 152 | | | | |
| sec-Butylbenzene | 21.2 | 1.00 | 20.00 | 0 | 106 | 72 | 129 | | | | |
| 4-Isopropyltoluene | 20.2 | 1.00 | 20.00 | 0 | 101 | 69.2 | 130 | | | | |
| 1,3-Dichlorobenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 71 | 115 | | | | |
| 1,4-Dichlorobenzene | 21.3 | 1.00 | 20.00 | 0 | 106 | 66.8 | 119 | | | | |
| n-Butylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.8 | 127 | | | | |
| 1,2-Dichlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 69.7 | 119 | | | | |
| 1,2-Dibromo-3-chloropropane | 14.3 | 1.00 | 20.00 | 0 | 71.6 | 63.1 | 136 | | | | |
| 1,2,4-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 73.4 | 127 | | | | |
| Hexachloro-1,3-butadiene | 20.2 | 4.00 | 20.00 | 0 | 101 | 58.6 | 138 | | | | |
| Naphthalene | 19.0 | 1.00 | 20.00 | 0 | 95.2 | 41.8 | 165 | | | | |
| 1,2,3-Trichlorobenzene | 19.4 | 4.00 | 20.00 | 0 | 97.0 | 48.7 | 156 | | | | |
| Surr: Dibromofluoromethane | 25.4 | | 25.00 | | 101 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.3 | | 25.00 | | 101 | 64.2 | 128 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **LCS-15802** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | | |
| Client ID: **LCSW** | Batch ID: **15802** | | | | | Analysis Date: **1/4/2017** | | SeqNo: **640458** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **LCSD-15802** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | | |
| Client ID: **LCSW** | Batch ID: **15802** | | | | | Analysis Date: **1/4/2017** | | SeqNo: **640459** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Dichlorodifluoromethane (CFC-12) | 14.7 | 1.00 | 20.00 | 0 | 73.4 | 43 | 136 | | | | |
| Chloromethane | 19.5 | 1.00 | 20.00 | 0 | 97.7 | 43.9 | 139 | | | | |
| Vinyl chloride | 19.9 | 0.200 | 20.00 | 0 | 99.5 | 53.6 | 139 | | | | |
| Bromomethane | 23.3 | 1.00 | 20.00 | 0 | 116 | 42.5 | 152 | | | | |
| Trichlorofluoromethane (CFC-11) | 20.1 | 1.00 | 20.00 | 0 | 101 | 43.5 | 149 | | | | |
| Chloroethane | 21.9 | 1.00 | 20.00 | 0 | 109 | 53 | 141 | | | | |
| 1,1-Dichloroethene | 21.3 | 1.00 | 20.00 | 0 | 107 | 65.6 | 136 | | | | |
| Methylene chloride | 22.1 | 1.00 | 20.00 | 0 | 111 | 67.1 | 131 | | | | |
| trans-1,2-Dichloroethene | 21.7 | 1.00 | 20.00 | 0 | 108 | 71.7 | 129 | | | | |
| Methyl tert-butyl ether (MTBE) | 17.4 | 1.00 | 20.00 | 0 | 86.9 | 67.7 | 131 | | | | |
| 1,1-Dichloroethane | 22.1 | 1.00 | 20.00 | 0 | 110 | 67.9 | 134 | | | | |
| 2,2-Dichloropropane | 13.3 | 2.00 | 20.00 | 0 | 66.7 | 33.7 | 152 | | | | |
| cis-1,2-Dichloroethene | 21.9 | 1.00 | 20.00 | 0 | 110 | 70.2 | 139 | | | | |
| Chloroform | 21.6 | 1.00 | 20.00 | 0 | 108 | 66.3 | 131 | | | | |
| 1,1,1-Trichloroethane (TCA) | 20.5 | 1.00 | 20.00 | 0 | 102 | 71 | 131 | | | | |
| 1,1-Dichloropropene | 21.9 | 1.00 | 20.00 | 0 | 110 | 69.9 | 124 | | | | |
| Carbon tetrachloride | 19.9 | 1.00 | 20.00 | 0 | 99.5 | 66.2 | 134 | | | | |
| 1,2-Dichloroethane (EDC) | 20.9 | 1.00 | 20.00 | 0 | 104 | 67 | 126 | | | | |
| Benzene | 22.3 | 1.00 | 20.00 | 0 | 112 | 69.3 | 132 | | | | |
| Trichloroethene (TCE) | 21.6 | 0.500 | 20.00 | 0 | 108 | 65.2 | 136 | | | | |
| 1,2-Dichloropropane | 22.4 | 1.00 | 20.00 | 0 | 112 | 70.5 | 130 | | | | |
| Bromodichloromethane | 19.7 | 1.00 | 20.00 | 0 | 98.6 | 67.2 | 137 | | | | |
| Dibromomethane | 19.5 | 1.00 | 20.00 | 0 | 97.3 | 75.5 | 126 | | | | |
| cis-1,3-Dichloropropene | 18.1 | 1.00 | 20.00 | 0 | 90.6 | 62.6 | 137 | | | | |
| Toluene | 22.1 | 1.00 | 20.00 | 0 | 110 | 61.3 | 145 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCSD-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640459**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| trans-1,3-Dichloropropylene | 16.0 | 1.00 | 20.00 | 0 | 80.2 | 56.5 | 163 | | | | |
| 1,1,2-Trichloroethane | 21.1 | 1.00 | 20.00 | 0 | 105 | 71.7 | 131 | | | | |
| 1,3-Dichloropropane | 20.4 | 1.00 | 20.00 | 0 | 102 | 73.5 | 127 | | | | |
| Tetrachloroethene (PCE) | 21.1 | 1.00 | 20.00 | 0 | 106 | 47.5 | 147 | | | | |
| Dibromochloromethane | 17.6 | 1.00 | 20.00 | 0 | 88.2 | 67.2 | 134 | | | | |
| 1,2-Dibromoethane (EDB) | 19.5 | 0.0600 | 20.00 | 0 | 97.3 | 73.6 | 125 | | | | |
| Chlorobenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.9 | 126 | | | | |
| 1,1,1,2-Tetrachloroethane | 19.5 | 1.00 | 20.00 | 0 | 97.7 | 76.8 | 124 | | | | |
| Ethylbenzene | 21.8 | 1.00 | 20.00 | 0 | 109 | 72 | 130 | | | | |
| m,p-Xylene | 42.6 | 1.00 | 40.00 | 0 | 106 | 70.3 | 134 | | | | |
| o-Xylene | 21.4 | 1.00 | 20.00 | 0 | 107 | 72.1 | 131 | | | | |
| Styrene | 21.1 | 1.00 | 20.00 | 0 | 106 | 64.3 | 140 | | | | |
| Isopropylbenzene | 21.3 | 1.00 | 20.00 | 0 | 107 | 73.9 | 128 | | | | |
| Bromoform | 17.3 | 1.00 | 20.00 | 0 | 86.4 | 55.3 | 141 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.7 | 1.00 | 20.00 | 0 | 93.3 | 62.9 | 132 | | | | |
| n-Propylbenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 74.5 | 127 | | | | |
| Bromobenzene | 20.1 | 1.00 | 20.00 | 0 | 101 | 71 | 131 | | | | |
| 1,3,5-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 73.1 | 128 | | | | |
| 2-Chlorotoluene | 21.4 | 1.00 | 20.00 | 0 | 107 | 70.8 | 130 | | | | |
| 4-Chlorotoluene | 21.1 | 1.00 | 20.00 | 0 | 106 | 70.1 | 131 | | | | |
| tert-Butylbenzene | 20.9 | 1.00 | 20.00 | 0 | 104 | 68.2 | 131 | | | | |
| 1,2,3-Trichloropropane | 17.7 | 1.00 | 20.00 | 0 | 88.6 | 67.7 | 131 | | | | |
| 1,2,4-Trichlorobenzene | 19.3 | 2.00 | 20.00 | 0 | 96.6 | 51.8 | 152 | | | | |
| sec-Butylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 72 | 129 | | | | |
| 4-Isopropyltoluene | 20.0 | 1.00 | 20.00 | 0 | 100 | 69.2 | 130 | | | | |
| 1,3-Dichlorobenzene | 21.6 | 1.00 | 20.00 | 0 | 108 | 71 | 115 | | | | |
| 1,4-Dichlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 66.8 | 119 | | | | |
| n-Butylbenzene | 20.8 | 1.00 | 20.00 | 0 | 104 | 73.8 | 127 | | | | |
| 1,2-Dichlorobenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 69.7 | 119 | | | | |
| 1,2-Dibromo-3-chloropropane | 14.7 | 1.00 | 20.00 | 0 | 73.6 | 63.1 | 136 | | | | |
| 1,2,4-Trimethylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.4 | 127 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

| Sample ID **LCSD-15802** | SampType: **LCS** | Units: **µg/L** | Prep Date: **1/3/2017** | RunNo: **33733** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **15802** | | Analysis Date: **1/4/2017** | SeqNo: **640459** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloro-1,3-butadiene | 19.6 | 4.00 | 20.00 | 0 | 98.2 | 58.6 | 138 | | | | |
| Naphthalene | 19.1 | 1.00 | 20.00 | 0 | 95.6 | 41.8 | 165 | | | | |
| 1,2,3-Trichlorobenzene | 19.4 | 4.00 | 20.00 | 0 | 97.2 | 48.7 | 156 | | | | |
| Surr: Dibromofluoromethane | 25.6 | | 25.00 | | 103 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.2 | | 25.00 | | 101 | 64.2 | 128 | | | | |

| Sample ID **MB-15802** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **1/3/2017** | RunNo: **33733** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **15802** | | Analysis Date: **1/4/2017** | SeqNo: **640460** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | | | | Q |
| Chloromethane | ND | 1.00 | | | | | | | | | |
| Vinyl chloride | ND | 0.200 | | | | | | | | | |
| Bromomethane | ND | 1.00 | | | | | | | | | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | | | | |
| Chloroethane | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Methylene chloride | ND | 1.00 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | | | | Q |
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Chloroform | ND | 1.00 | | | | | | | | | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.00 | | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | | | | |
| Benzene | ND | 1.00 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-15802** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **MBLKW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640460**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene (TCE) | ND | 0.500 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | | | | |
| Bromodichloromethane | ND | 1.00 | | | | | | | | | |
| Dibromomethane | ND | 1.00 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | | | | |
| Toluene | ND | 1.00 | | | | | | | | | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | | | | Q |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | | | | |
| Dibromochloromethane | ND | 1.00 | | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | | | | |
| Chlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | | | | |
| Ethylbenzene | ND | 1.00 | | | | | | | | | |
| m,p-Xylene | ND | 1.00 | | | | | | | | | |
| o-Xylene | ND | 1.00 | | | | | | | | | |
| Styrene | ND | 1.00 | | | | | | | | | |
| Isopropylbenzene | ND | 1.00 | | | | | | | | | |
| Bromoform | ND | 1.00 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | | | | |
| n-Propylbenzene | ND | 1.00 | | | | | | | | | |
| Bromobenzene | ND | 1.00 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | | | | |
| 2-Chlorotoluene | ND | 1.00 | | | | | | | | | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | | | | |
| tert-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | | | | |
| sec-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

| Sample ID **MB-15802** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **1/3/2017** | RunNo: **33733** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **15802** | | Analysis Date: **1/4/2017** | SeqNo: **640460** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| n-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | | | | Q |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | | | | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | | | | |
| Naphthalene | ND | 1.00 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | | | | |
| Surr: Dibromofluoromethane | 24.3 | | 25.00 | | 97.2 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.3 | | 25.00 | | 101 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 23.7 | | 25.00 | | 94.9 | 64.2 | 128 | | | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| Sample ID **1612278-011ADUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **1/3/2017** | RunNo: **33733** |
|---|---|---|---|---|
| Client ID: **TWP16-PMW5B** | Batch ID: **15802** | | Analysis Date: **1/4/2017** | SeqNo: **640449** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | 0 | | 30 | Q |
| Chloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Vinyl chloride | ND | 0.200 | | | | | | 0 | | 30 | |
| Bromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methylene chloride | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | 0 | | 30 | Q |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612278-011ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **TWP16-PMW5B** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640449**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Carbon tetrachloride | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | 0 | | 30 | |
| Benzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichloroethene (TCE) | ND | 0.500 | | | | | | 0 | | 30 | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromodichloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Toluene | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromochloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | 0 | | 30 | |
| Chlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Ethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| m,p-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| o-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| Styrene | ND | 1.00 | | | | | | 0 | | 30 | |
| Isopropylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromoform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Propylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612278-011ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **TWP16-PMW5B** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640449**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| tert-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | 0 | | 30 | |
| sec-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | 0 | | 30 | |
| Naphthalene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.8 | | 25.00 | | 103 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 25.7 | | 25.00 | | 103 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.3 | | 25.00 | | 97.4 | 64.2 | 128 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | 0 | | 30 | Q |
| Chloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Vinyl chloride | ND | 0.200 | | | | | | 0 | | 30 | |
| Bromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methylene chloride | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | 0 | | 30 | Q |
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Carbon tetrachloride | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | 0 | | 30 | |
| Benzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichloroethene (TCE) | ND | 0.500 | | | | | | 0 | | 30 | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromodichloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Toluene | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromochloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | 0 | | 30 | |
| Chlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Ethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| m,p-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| o-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Styrene | ND | 1.00 | | | | | | 0 | | 30 | |
| Isopropylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromoform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Propylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 2-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| tert-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | 0 | | 30 | |
| sec-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | 0 | | 30 | |
| Naphthalene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.5 | | 25.00 | | 102 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 25.6 | | 25.00 | | 102 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.2 | | 25.00 | | 96.7 | 64.2 | 128 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FS** | Work Order Number: | **1612278** |
| Logged by: | **Chelsea Ward** | Date Received: | **12/28/2016 5:24:00 PM** |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Required ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >0°C to 10.0°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☑ | NA ☐ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☑ | No ☐ | NA ☐ |

| | | | |
|---|---|---|---|
| Person Notified: | Erin Murray | Date | 12/28/2016 |
| By Whom: | Chelsea Ward | Via: | ☑ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | Missing bottles and Total/Dissolved Metals | | |
| Client Instructions: | Only run VOCs/Gx on sample -009 and Dissolved Metals | | |

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Cooler 1 | 2.4 |
| Cooler 2 | 1.7 |
| Cooler 3 | 0.5 |
| Sample 1 | 0.7 |
| Sample 2 | 1.9 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FS** | Work Order Number: | **1612278** |
| Logged by: | **Chelsea Ward** | Date Received: | **12/28/2016 5:24:00 PM** |

| Item # | Temp ºC |
|---|---|
| Sample 3 | 2.8 |
| Temp Blank 1 | 0.2 |
| Temp Blank 2 | 1.7 |
| Temp Blank 3 | 1.6 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# Chain of Custody Record and Laboratory Services Agreement

**Fremont** ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16 | Laboratory Project No (internal): 1612278 | Page: 1 of: 2

Client: Floyd Snider
Address: 601 Union Suite 600
City, State, Zip: Seattle, WA 98101
Telephone: 206.292.2078 Fax:

Project Name: Ave 55 - Taylor Way
Project No:
Collected by: L. Wacter & E. Murray
Location: Tacoma, WA
Report To (PM): Tom Colligan
PM Email: tom.colligan@floydsnider.com

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Diss... | Total (T) | Dissolved (D) | Anions (IC)*** | EDB (8011) | Hex Cr | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 TWP16-PMW1A | 12/28/16 | 1020 | GW | X | X | #### | | X | X | X | | | X | | D | | X | | | | |
| 2 TWP16-PMW1B | | 1030 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 3 TWP16-PMW2B | | 1200 | | X | X | | 4M | X | X | X | | | X | | | | X | | | | |
| 4 TWP16-PMW2X | | 1205 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 5 TWP16-PMW2A | | 1200 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 6 TWP16-PMW3A | | 1320 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 7 TWP16-PMW3B | | 1315 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 8 TWP16-PMW4A | | 1425 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 9 TWP16-PMW4B | | 1445 | | X | X | | | ~~X~~ | ~~X~~ | ~~X~~ | | | ~~X~~ | | | | ~~X~~ | | | | Only VOC/Gx per E. Murray 12/29 CW |
| 10 TWP16-PMW5A | | 1535 | | X | X | | | | X | X | | | X | | | | X | | | | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B (Ba) Be Ca (Cd) Co (Cr) (Cu) Fe (Hg) K Mg Mn Mo Na (Ni) (Pb) Sb Se Sr Sn Ti Tl U V (Zn)

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x [signature] | 12/28/16 1724 | x [signature] | 12/28/16 17:24 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

# Fremont Analytical

## Chain of Custody Record and Laboratory Services Agreement

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16

Laboratory Project No (internal): 1612278

Page: 2 of: 2

Client: Floyd / Snider
Address: Same As First
City, State, Zip:
Telephone: Fax:

Project Name: AVC 55 - Taylor
Project No: Collected by:
Location:
Report To (PM):
PM Email:

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| | Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) D/T | Total (T) / Dissolved (D) | Anions (IC)*** | EDB (8011) | Hex Chromium | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TW16-PMW5B | 12/28/16 | 1600 | W | X | X | | X | | X | X | | | X | D | | X | | | | |
| 2 | Trip Blank | | | W | X | X | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B (Ba) Be Ca (Cd) Co (Cr) (Cu) Fe (Hg) K Mg Mn Mo Na (Ni) (Pb) Sb Se Sr Sn Ti Tl U V (Zn)

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x [signature] | 12/23/16 1724 | x [signature] | 12/28/16 1724 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

# Fremont Analytical

## Chain of Custody Record and Laboratory Services Agreement

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16 | Laboratory Project No (internal): 1612-278 | Page: 1 of: 2

Client: Floyd Snider
Address: 601 Union Suite 600
City, State, Zip: Seattle, WA 98101
Telephone: 206.292.2078 Fax:

Project Name: Ave 55 - Taylor Way
Project No:
Collected by: L. Wacter & E. Murray
Location: Tacoma, WA
Report To (PM): Tom Colligan
PM Email: tom.colligan@floydsnider.com

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Diss... Total (T) / Dissolved (D) | Anions (IC)*** | EDB (8011) | Hex Cr+ | MTBE/VOC | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 TWP16-PMW1A | 12/28 | 1020 | GW | X | X | #### | X | X | X | | | X | D | | X | | X | X Add Analysis 12/30/16 STANDARD TAT |
| 2 TWP16-PMW1B | | 1030 | | X | X | | X | X | X | | | X | | | X | | | |
| 3 TWP16-PMW2B | | 1200 | | X | X | 4M | X | X | X | | | X | | | X | | | |
| 4 TWP16-PMW2X | | 1205 | | X | X | | X | X | X | | | X | | | X | | | |
| 5 TWP16-PMW2A | | 1200 | | X | X | | X | X | X | | | X | | | X | | X | |
| 6 TWP16-PMW3A | | 1320 | | X | X | | X | X | X | | | X | | | X | | X | |
| 7 TWP16-PMW3B | | 1315 | | X | X | | X | X | X | | | X | | | X | | | |
| 8 TWP16-PMW4A | | 1425 | | X | X | | X | X | X | | | X | | | X | | X | |
| 9 TWP16-PMW4B | | 1445 | | X | X | | | | | | | X | | | X | | | Only VOC/GX per E. Murray 12/29/16 |
| 10 TWP16-PMW5A | | 1535 | | X | X | | | X | X | | | X | | | X | | X | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B (Ba) Be Ca (Cd) Co (Cr) (Cu) Fe (Hg) K Mg Mn Mo Na (Ni) (Pb) Sb Se Sr Sn Ti Tl U V (Zn)

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x [signature] | 12/28/16 1724 | x [signature] | 12/28/16 17:24 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day (ST)

^Please coordinate with the lab in advance

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Floyd | Snider**
Tom Colligan
601 Union St., Suite 600
Seattle, WA 98101

**RE: Ave 55 - Taylor Way**
**Work Order Number: 1612278**

January 09, 2017

**Attention Tom Colligan:**

Fremont Analytical, Inc. received 12 sample(s) on 12/28/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***
***Dissolved Gases by RSK-175***
***Dissolved Mercury by EPA Method 245.1***
***Dissolved Metals by EPA Method 200.8***
***Gasoline by NWTPH-Gx***
***Hexavalent Chromium by EPA 7196 / SM 3500 Cr B***
***Semi-Volatile Organic Compounds by EPA Method 8270***
***Volatile Organic Compounds by EPA Method 8260C***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Work Order:** 1612278

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 1612278-001 | TWP16-PMW1A | 12/28/2016 10:20 AM | 12/28/2016 5:24 PM |
| 1612278-002 | TWP16-PMW1B | 12/28/2016 10:30 AM | 12/28/2016 5:24 PM |
| 1612278-003 | TWP16-PMW2B | 12/28/2016 12:00 PM | 12/28/2016 5:24 PM |
| 1612278-004 | TWP16-PMW2X | 12/28/2016 12:05 PM | 12/28/2016 5:24 PM |
| 1612278-005 | TWP16-PMW2A | 12/28/2016 12:00 PM | 12/28/2016 5:24 PM |
| 1612278-006 | TWP16-PMW3A | 12/28/2016 1:20 PM | 12/28/2016 5:24 PM |
| 1612278-007 | TWP16-PMW3B | 12/28/2016 1:15 PM | 12/28/2016 5:24 PM |
| 1612278-008 | TWP16-PMW4A | 12/28/2016 2:25 PM | 12/28/2016 5:24 PM |
| 1612278-009 | TWP16-PMW4B | 12/28/2016 2:45 PM | 12/28/2016 5:24 PM |
| 1612278-010 | TWP16-PMW5A | 12/28/2016 3:35 PM | 12/28/2016 5:24 PM |
| 1612278-011 | TWP16-PMW5B | 12/28/2016 4:00 PM | 12/28/2016 5:24 PM |
| 1612278-012 | Trip Blank | 12/20/2016 2:59 PM | 12/28/2016 5:24 PM |



Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **1612278**
Date: **1/9/2017**

**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 7.79 | 0.100 | DE | mg/L | 20 | 1/6/2017 12:01:00 PM |

**NOTES:**
E - Estimated value. The amount exceeds the linear working range of the instrument.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 49.9 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Diesel Range Organics (C12-C24) | 483 | 49.9 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Heavy Oil | 943 | 99.7 | | µg/L | 1 | 12/30/2016 3:27:56 PM |
| Surr: 2-Fluorobiphenyl | 77.9 | 50-150 | | %Rec | 1 | 12/30/2016 3:27:56 PM |
| Surr: o-Terphenyl | 83.9 | 50-150 | | %Rec | 1 | 12/30/2016 3:27:56 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Chlorophenol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,3-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,4-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,2-Dichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzyl alcohol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-chloroethyl) ether | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Methylphenol (o-cresol) | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachloroethane | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| N-Nitrosodi-n-propylamine | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Nitrobenzene | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Isophorone | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Methylphenol (p-cresol) | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Nitrophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dimethylphenol | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-chloroethoxy)methane | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 1,2,4-Trichlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Naphthalene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chloroaniline | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorobutadiene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chloro-3-methylphenol | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Methylnaphthalene | 0.593 | 0.495 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.777 | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorocyclopentadiene | ND | 0.991 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4,6-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4,5-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Chloronaphthalene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2-Nitroaniline | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Acenaphthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dimethylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,6-Dinitrotoluene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Acenaphthylene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dinitrophenol | ND | 1.98 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dibenzofuran | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 2,4-Dinitrotoluene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Nitrophenol | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Fluorene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Diethylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.95 | Q | µg/L | 1 | 1/5/2017 5:35:17 PM |
| 4-Bromophenyl phenyl ether | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Hexachlorobenzene | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Pentachlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Phenanthrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Carbazole | ND | 4.95 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Di-n-butyl phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzyl Butylphthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benz[a]anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Chrysene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Di-n-octyl phthalate | ND | 0.991 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (b) fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (k) fluoranthene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo[a]pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Dibenzo (a,h) anthracene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |
| Benzo (g,h,I) perylene | ND | 0.495 | | µg/L | 1 | 1/5/2017 5:35:17 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: 2,4,6-Tribromophenol | 96.5 | 5-127 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: 2-Fluorobiphenyl | 61.1 | 24.1-139 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: Nitrobenzene-d5 | 65.5 | 21.9-139 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: Phenol-d6 | 62.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 5:35:17 PM |
| Surr: p-Terphenyl | 60.4 | 25.2-132 | | %Rec | 1 | 1/5/2017 5:35:17 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | 55.1 | 50.0 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| Surr: 4-Bromofluorobenzene | 96.3 | 65-135 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 1:40:34 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 1:40:34 PM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 1/4/2017 1:40:34 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 1:40:34 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:20:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-001
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Surr: 1-Bromo-4-fluorobenzene | 96.7 | 64.2-128 | | %Rec | 1 | 1/4/2017 1:40:34 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:17:29 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 1.83 | 1.00 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Barium | 357 | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Chromium | 0.614 | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| Zinc | 2.44 | 1.50 | | µg/L | 1 | 1/3/2017 12:41:57 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:16:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Diesel Range Organics (C12-C24) | 416 | 50.3 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Heavy Oil | 1,170 | 101 | | µg/L | 1 | 12/30/2016 4:29:34 PM |
| Surr: 2-Fluorobiphenyl | 71.2 | 50-150 | | %Rec | 1 | 12/30/2016 4:29:34 PM |
| Surr: o-Terphenyl | 70.9 | 50-150 | | %Rec | 1 | 12/30/2016 4:29:34 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Chlorophenol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,3-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,4-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,2-Dichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzyl alcohol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-chloroethyl) ether | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Methylphenol (o-cresol) | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachloroethane | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| N-Nitrosodi-n-propylamine | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Nitrobenzene | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Isophorone | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Methylphenol (p-cresol) | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Nitrophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dimethylphenol | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-chloroethoxy)methane | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1,2,4-Trichlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Naphthalene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chloroaniline | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorobutadiene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chloro-3-methylphenol | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Methylnaphthalene | ND | 0.496 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 1-Methylnaphthalene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorocyclopentadiene | ND | 0.992 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4,6-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4,5-Trichlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Chloronaphthalene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2-Nitroaniline | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dimethylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,6-Dinitrotoluene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Acenaphthylene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dinitrophenol | ND | 1.98 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dibenzofuran | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 2,4-Dinitrotoluene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Nitrophenol | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Fluorene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Diethylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.96 | Q | µg/L | 1 | 1/5/2017 5:56:17 PM |
| 4-Bromophenyl phenyl ether | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Hexachlorobenzene | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Pentachlorophenol | ND | 1.98 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Phenanthrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Carbazole | ND | 4.96 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Di-n-butyl phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzyl Butylphthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benz[a]anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Chrysene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Di-n-octyl phthalate | ND | 0.992 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (b) fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (k) fluoranthene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo[a]pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Dibenzo (a,h) anthracene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Benzo (g,h,I) perylene | ND | 0.496 | | µg/L | 1 | 1/5/2017 5:56:17 PM |
| Surr: 2,4,6-Tribromophenol | 67.7 | 5-127 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: 2-Fluorobiphenyl | 64.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: Nitrobenzene-d5 | 77.6 | 21.9-139 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: Phenol-d6 | 68.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 5:56:17 PM |
| Surr: p-Terphenyl | 72.0 | 25.2-132 | | %Rec | 1 | 1/5/2017 5:56:17 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Methyl tert-butyl ether (MTBE) | 1.30 | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 2:09:50 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:09:50 PM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: Toluene-d8 | 103 | 40.1-139 | | %Rec | 1 | 1/4/2017 2:09:50 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 2:09:50 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 10:30:00 AM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-002
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW1B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:19:11 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 6.02 | 1.00 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Barium | 17.5 | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Chromium | 0.894 | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:45:33 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:19:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Diesel Range Organics (C12-C24) | 107 | 50.3 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Heavy Oil | ND | 101 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Heavy Oil Range Organics | 254 | 101 | | µg/L | 1 | 12/30/2016 5:00:24 PM |
| Surr: 2-Fluorobiphenyl | 67.1 | 50-150 | | %Rec | 1 | 12/30/2016 5:00:24 PM |
| Surr: o-Terphenyl | 77.3 | 50-150 | | %Rec | 1 | 12/30/2016 5:00:24 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube Oil ranges.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Chlorophenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,3-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,4-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,2-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzyl alcohol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-chloroethyl) ether | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Methylphenol (o-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachloroethane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| N-Nitrosodi-n-propylamine | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Nitrobenzene | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Isophorone | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Methylphenol (p-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Nitrophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dimethylphenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-chloroethoxy)methane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1,2,4-Trichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Naphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chloroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorobutadiene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chloro-3-methylphenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Methylnaphthalene | ND | 0.504 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 1-Methylnaphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorocyclopentadiene | ND | 1.01 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4,6-Trichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4,5-Trichlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2-Nitroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Acenaphthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dimethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,6-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Acenaphthylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dinitrophenol | ND | 2.02 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dibenzofuran | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 2,4-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Nitrophenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Fluorene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Diethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.04 | Q | µg/L | 1 | 1/5/2017 6:17:20 PM |
| 4-Bromophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Hexachlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Pentachlorophenol | ND | 2.02 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Phenanthrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Carbazole | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Di-n-butyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzyl Butylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benz[a]anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Chrysene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Di-n-octyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (b) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (k) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo[a]pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Dibenzo (a,h) anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Benzo (g,h,I) perylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:17:20 PM |
| Surr: 2,4,6-Tribromophenol | 107 | 5-127 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: 2-Fluorobiphenyl | 60.3 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: Nitrobenzene-d5 | 66.8 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| Surr: Phenol-d6 | 68.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:17:20 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: p-Terphenyl | 75.2 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:17:20 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 2:39:06 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 2:39:06 PM |
| Surr: Dibromofluoromethane | 104 | 45.4-152 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 2:39:06 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.9 | 64.2-128 | | %Rec | 1 | 1/4/2017 2:39:06 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-003
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:20:53 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Barium | 161 | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:49:10 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:22:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.0 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Diesel Range Organics (C12-C24) | 136 | 50.0 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Heavy Oil Range Organics | 133 | 100 | | µg/L | 1 | 12/30/2016 5:31:13 PM |
| Surr: 2-Fluorobiphenyl | 77.4 | 50-150 | | %Rec | 1 | 12/30/2016 5:31:13 PM |
| Surr: o-Terphenyl | 91.6 | 50-150 | | %Rec | 1 | 12/30/2016 5:31:13 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Chlorophenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,3-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,4-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,2-Dichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzyl alcohol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-chloroethyl) ether | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Methylphenol (o-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachloroethane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| N-Nitrosodi-n-propylamine | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Nitrobenzene | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Isophorone | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Methylphenol (p-cresol) | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Nitrophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dimethylphenol | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-chloroethoxy)methane | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1,2,4-Trichlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Naphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chloroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorobutadiene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chloro-3-methylphenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Methylnaphthalene | ND | 0.504 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 1-Methylnaphthalene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorocyclopentadiene | ND | 1.01 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4,6-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4,5-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2-Nitroaniline | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Acenaphthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dimethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,6-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Acenaphthylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dinitrophenol | ND | 2.01 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dibenzofuran | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 2,4-Dinitrotoluene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Nitrophenol | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Fluorene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Diethylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.04 | Q | µg/L | 1 | 1/5/2017 6:38:27 PM |
| 4-Bromophenyl phenyl ether | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Hexachlorobenzene | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Pentachlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Phenanthrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Carbazole | ND | 5.04 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Di-n-butyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzyl Butylphthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benz[a]anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Chrysene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Di-n-octyl phthalate | ND | 1.01 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (b) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (k) fluoranthene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo[a]pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Dibenzo (a,h) anthracene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Benzo (g,h,I) perylene | ND | 0.504 | | µg/L | 1 | 1/5/2017 6:38:27 PM |
| Surr: 2,4,6-Tribromophenol | 99.3 | 5-127 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: 2-Fluorobiphenyl | 59.9 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: Nitrobenzene-d5 | 71.0 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:38:27 PM |
| Surr: Phenol-d6 | 62.0 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:38:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: p-Terphenyl | 66.7 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:38:27 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: 4-Bromofluorobenzene | 95.8 | 65-135 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 3:08:27 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:08:27 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 3:08:27 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.2 | 64.2-128 | | %Rec | 1 | 1/4/2017 3:08:27 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:05:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-004
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2X**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:22:36 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Barium | 165 | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Nickel | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:52:46 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:26:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 0.191 | 0.00500 | | mg/L | 1 | 1/6/2017 11:51:00 AM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.2 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Diesel Range Organics (C12-C24) | 82.1 | 50.2 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Heavy Oil Range Organics | 109 | 100 | | µg/L | 1 | 12/30/2016 6:01:59 PM |
| Surr: 2-Fluorobiphenyl | 72.8 | 50-150 | | %Rec | 1 | 12/30/2016 6:01:59 PM |
| Surr: o-Terphenyl | 87.8 | 50-150 | | %Rec | 1 | 12/30/2016 6:01:59 PM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Chlorophenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzyl alcohol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-chloroethyl) ether | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachloroethane | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Nitrobenzene | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Isophorone | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Nitrophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dimethylphenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Naphthalene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chloroaniline | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorobutadiene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chloro-3-methylphenol | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Methylnaphthalene | ND | 0.502 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorocyclopentadiene | ND | 1.00 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4,6-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4,5-Trichlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Chloronaphthalene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2-Nitroaniline | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Acenaphthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dimethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,6-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Acenaphthylene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dinitrophenol | ND | 2.01 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dibenzofuran | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 2,4-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Nitrophenol | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Fluorene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Diethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.02 | Q | µg/L | 1 | 1/5/2017 6:59:28 PM |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Hexachlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Pentachlorophenol | ND | 2.01 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Phenanthrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Carbazole | ND | 5.02 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Di-n-butyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzyl Butylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benz[a]anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Chrysene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Di-n-octyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (b) fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (k) fluoranthene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo[a]pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Dibenzo (a,h) anthracene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |
| Benzo (g,h,I) perylene | ND | 0.502 | | µg/L | 1 | 1/5/2017 6:59:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: 2,4,6-Tribromophenol | 88.0 | 5-127 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: 2-Fluorobiphenyl | 59.2 | 24.1-139 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: Nitrobenzene-d5 | 74.5 | 21.9-139 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: Phenol-d6 | 64.9 | 10.3-128 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| Surr: p-Terphenyl | 65.3 | 25.2-132 | | %Rec | 1 | 1/5/2017 6:59:28 PM |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| Surr: 4-Bromofluorobenzene | 97.2 | 65-135 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 3:37:49 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 3:37:49 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 3:37:49 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 3:37:49 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 12:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-005
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW2A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Surr: 1-Bromo-4-fluorobenzene | 97.5 | 64.2-128 | | %Rec | 1 | 1/4/2017 3:37:49 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:24:19 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 1.65 | 1.00 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Barium | 235 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Copper | 0.695 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Nickel | 1.09 | 0.500 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| Zinc | 24.0 | 1.50 | | µg/L | 1 | 1/3/2017 12:20:18 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:30:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 0.171 | 0.00500 | | mg/L | 1 | 1/6/2017 11:54:00 AM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.1 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Diesel Range Organics (C12-C24) | 78.9 | 50.1 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Heavy Oil | ND | 100 | | µg/L | 1 | 12/30/2016 8:35:05 PM |
| Surr: 2-Fluorobiphenyl | 71.7 | 50-150 | | %Rec | 1 | 12/30/2016 8:35:05 PM |
| Surr: o-Terphenyl | 81.0 | 50-150 | | %Rec | 1 | 12/30/2016 8:35:05 PM |
| **NOTES:** | | | | | | |
| DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24). | | | | | | |
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Chlorophenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,3-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,4-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,2-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzyl alcohol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-chloroethyl) ether | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Methylphenol (o-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachloroethane | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| N-Nitrosodi-n-propylamine | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Nitrobenzene | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Isophorone | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Methylphenol (p-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Nitrophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dimethylphenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-chloroethoxy)methane | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1,2,4-Trichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Naphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chloroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorobutadiene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chloro-3-methylphenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Methylnaphthalene | ND | 0.498 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 1-Methylnaphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorocyclopentadiene | ND | 0.997 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| 2,4,6-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4,5-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Chloronaphthalene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2-Nitroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Acenaphthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dimethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,6-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Acenaphthylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dinitrophenol | ND | 1.99 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dibenzofuran | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 2,4-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Nitrophenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Fluorene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Diethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.98 | Q | µg/L | 1 | 1/5/2017 7:20:28 PM |
| 4-Bromophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Hexachlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Pentachlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Phenanthrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Carbazole | ND | 4.98 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Di-n-butyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzyl Butylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benz[a]anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Chrysene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Di-n-octyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (b) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (k) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo[a]pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Dibenzo (a,h) anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Benzo (g,h,I) perylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 7:20:28 PM |
| Surr: 2,4,6-Tribromophenol | 71.6 | 5-127 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: 2-Fluorobiphenyl | 57.5 | 24.1-139 | | %Rec | 1 | 1/5/2017 7:20:28 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: Nitrobenzene-d5 | 54.7 | 21.9-139 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: Phenol-d6 | 44.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| Surr: p-Terphenyl | 70.6 | 25.2-132 | | %Rec | 1 | 1/5/2017 7:20:28 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: 4-Bromofluorobenzene | 96.5 | 65-135 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 4:07:10 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:20:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:07:10 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 4:07:10 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.0 | 64.2-128 | | %Rec | 1 | 1/4/2017 4:07:10 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-006
**Client Sample ID:** **TWP16-PMW3A**

**Collection Date:** 12/28/2016 1:20:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:34:27 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 2.02 | 1.00 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Barium | 22.7 | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Nickel | 11.7 | 0.500 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| Zinc | 4.41 | 1.50 | | µg/L | 1 | 1/3/2017 12:56:22 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:33:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 49.7 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Heavy Oil | ND | 99.4 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Heavy Oil Range Organics | 491 | 99.4 | | µg/L | 1 | 12/30/2016 9:05:33 PM |
| Surr: 2-Fluorobiphenyl | 64.0 | 50-150 | | %Rec | 1 | 12/30/2016 9:05:33 PM |
| Surr: o-Terphenyl | 65.1 | 50-150 | | %Rec | 1 | 12/30/2016 9:05:33 PM |

**NOTES:**
Heavy Oil Range Organics - Indicates the presence of unresolved compounds in the Lube+ Oil ranges.

| Semi-Volatile Organic Compounds by EPA Method 8270 | | | | Batch ID: 15825 | | Analyst: BT |
|---|---|---|---|---|---|---|
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Chlorophenol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,3-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,4-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,2-Dichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzyl alcohol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Methylphenol (o-cresol) | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachloroethane | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| N-Nitrosodi-n-propylamine | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Isophorone | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Methylphenol (p-cresol) | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dimethylphenol | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-chloroethoxy)methane | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1,2,4-Trichlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Naphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chloroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorobutadiene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chloro-3-methylphenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Methylnaphthalene | ND | 0.499 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 1-Methylnaphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorocyclopentadiene | ND | 0.998 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Chloronaphthalene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2-Nitroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dimethylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,6-Dinitrotoluene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Acenaphthylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dibenzofuran | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 2,4-Dinitrotoluene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Nitrophenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Fluorene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Diethylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.99 | Q | µg/L | 1 | 1/5/2017 7:41:31 PM |
| 4-Bromophenyl phenyl ether | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Hexachlorobenzene | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Phenanthrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Carbazole | ND | 4.99 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Di-n-butyl phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzyl Butylphthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benz[a]anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Chrysene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Di-n-octyl phthalate | ND | 0.998 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (b) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (k) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo[a]pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Dibenzo (a,h) anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Benzo (g,h,I) perylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 7:41:31 PM |
| Surr: 2,4,6-Tribromophenol | 113 | 5-127 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: 2-Fluorobiphenyl | 55.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: Nitrobenzene-d5 | 64.2 | 21.9-139 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: Phenol-d6 | 61.0 | 10.3-128 | | %Rec | 1 | 1/5/2017 7:41:31 PM |
| Surr: p-Terphenyl | 75.4 | 25.2-132 | | %Rec | 1 | 1/5/2017 7:41:31 PM |

**Client:** Floyd | Snider **Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007 **Matrix:** Groundwater
**Client Sample ID: TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Surr: Toluene-d8 | 102 | 65-135 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: 4-Bromofluorobenzene | 96.4 | 65-135 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 4:36:32 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 4:36:32 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 4:36:32 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 4:36:32 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 1:15:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-007
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW3B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:36:09 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 25.1 | 1.00 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Barium | 16.1 | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Nickel | 1.05 | 0.500 | | µg/L | 1 | 1/3/2017 12:59:59 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 12:59:59 PM |

**NOTES:**
Chromium results should be considered an estimated value. Potential matrix effect prevents accurate quantitation.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | 0.0642 | 0.0500 | | mg/L | 1 | 12/29/2016 9:37:00 AM |

**NOTES:**
Chromium results should be considered an estimated value. Potential matrix effect prevents accurate quantitation.

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 14.6 | 0.100 | DE | mg/L | 20 | 1/6/2017 12:03:00 PM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/3/2017 11:02:05 PM |
| Heavy Oil | 3,750 | 101 | | µg/L | 1 | 1/3/2017 11:02:05 PM |
| Surr: 2-Fluorobiphenyl | 74.6 | 50-150 | | %Rec | 1 | 1/3/2017 11:02:05 PM |
| Surr: o-Terphenyl | 78.5 | 50-150 | | %Rec | 1 | 1/3/2017 11:02:05 PM |
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Chlorophenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzyl alcohol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachloroethane | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Isophorone | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dimethylphenol | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Naphthalene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chloroaniline | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorobutadiene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chloro-3-methylphenol | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Methylnaphthalene | ND | 0.500 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 1-Methylnaphthalene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorocyclopentadiene | ND | 1.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2-Chloronaphthalene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 2-Nitroaniline | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Acenaphthene | 1.57 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dimethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,6-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Acenaphthylene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dibenzofuran | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 2,4-Dinitrotoluene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Nitrophenol | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Fluorene | 0.808 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Diethylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | Q | µg/L | 1 | 1/5/2017 8:02:25 PM |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Hexachlorobenzene | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Phenanthrene | 0.631 | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Carbazole | ND | 5.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Di-n-butyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzyl Butylphthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benz[a]anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Chrysene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Bis(2-ethylhexyl) phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Di-n-octyl phthalate | ND | 1.00 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (b) fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (k) fluoranthene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo[a]pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Dibenzo (a,h) anthracene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Benzo (g,h,I) perylene | ND | 0.500 | | µg/L | 1 | 1/5/2017 8:02:25 PM |
| Surr: 2,4,6-Tribromophenol | 106 | 5-127 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: 2-Fluorobiphenyl | 63.3 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: Nitrobenzene-d5 | 62.4 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: Phenol-d6 | 58.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:02:25 PM |
| Surr: p-Terphenyl | 54.8 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:02:25 PM |

**Client:** Floyd | Snider **Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008 **Matrix:** Groundwater
**Client Sample ID: TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | 189 | 50.0 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Surr: Toluene-d8 | 102 | 65-135 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: 4-Bromofluorobenzene | 98.5 | 65-135 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 5:05:48 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| sec-Butylbenzene | 1.00 | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:05:48 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 5:05:48 PM |
| Surr: 1-Bromo-4-fluorobenzene | 98.3 | 64.2-128 | | %Rec | 1 | 1/4/2017 5:05:48 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:25:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-008
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:37:51 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 3.78 | 1.00 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Barium | 38.5 | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Chromium | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Nickel | 1.15 | 0.500 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| Zinc | 1.92 | 1.50 | | µg/L | 1 | 1/3/2017 1:03:35 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:40:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:45:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-009
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: 4-Bromofluorobenzene | 96.3 | 65-135 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 5:35:04 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 2:45:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-009
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW4B**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 5:35:04 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 5:35:04 PM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 1/4/2017 5:35:04 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Gases by RSK-175** | | | | Batch ID: R33761 | | Analyst: BC |
| Methane | 4.15 | 0.100 | D | mg/L | 20 | 1/6/2017 12:05:00 PM |
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Diesel Range Organics (C12-C24) | 128 | 50.3 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Heavy Oil | 668 | 101 | | µg/L | 1 | 1/3/2017 11:32:08 PM |
| Surr: 2-Fluorobiphenyl | 77.3 | 50-150 | | %Rec | 1 | 1/3/2017 11:32:08 PM |
| Surr: o-Terphenyl | 80.6 | 50-150 | | %Rec | 1 | 1/3/2017 11:32:08 PM |
| **NOTES:** | | | | | | |
| DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24). | | | | | | |
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Chlorophenol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,3-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,4-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,2-Dichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzyl alcohol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-chloroethyl) ether | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Methylphenol (o-cresol) | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachloroethane | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| N-Nitrosodi-n-propylamine | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Nitrobenzene | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Isophorone | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Methylphenol (p-cresol) | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Nitrophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dimethylphenol | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-chloroethoxy)methane | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1,2,4-Trichlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Naphthalene | 1.03 | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chloroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorobutadiene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chloro-3-methylphenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Methylnaphthalene | ND | 0.499 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 1-Methylnaphthalene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorocyclopentadiene | ND | 0.999 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| 2,4,6-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4,5-Trichlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Chloronaphthalene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2-Nitroaniline | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Acenaphthene | 0.807 | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dimethylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,6-Dinitrotoluene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Acenaphthylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dinitrophenol | ND | 2.00 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dibenzofuran | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 2,4-Dinitrotoluene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Nitrophenol | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Fluorene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Diethylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.99 | Q | µg/L | 1 | 1/5/2017 8:23:19 PM |
| 4-Bromophenyl phenyl ether | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Hexachlorobenzene | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Pentachlorophenol | ND | 2.00 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Phenanthrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Carbazole | ND | 4.99 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Di-n-butyl phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzyl Butylphthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benz[a]anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Chrysene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Di-n-octyl phthalate | ND | 0.999 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (b) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (k) fluoranthene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo[a]pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Dibenzo (a,h) anthracene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Benzo (g,h,I) perylene | ND | 0.499 | | µg/L | 1 | 1/5/2017 8:23:19 PM |
| Surr: 2,4,6-Tribromophenol | 96.2 | 5-127 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: 2-Fluorobiphenyl | 52.5 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:23:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Surr: Nitrobenzene-d5 | 66.3 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: Phenol-d6 | 62.6 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| Surr: p-Terphenyl | 53.5 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:23:19 PM |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: 4-Bromofluorobenzene | 97.4 | 65-135 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 6:04:21 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Naphthalene | 2.23 | 1.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:04:21 PM |
| Surr: Dibromofluoromethane | 104 | 45.4-152 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 6:04:21 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.7 | 64.2-128 | | %Rec | 1 | 1/4/2017 6:04:21 PM |

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 3:35:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-010
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5A**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:39:34 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | ND | 1.00 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Barium | 47.0 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Chromium | 1.34 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Copper | 1.06 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Nickel | 0.963 | 0.500 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| Zinc | 5.57 | 1.50 | | µg/L | 1 | 1/3/2017 1:07:11 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 12/29/2016 9:44:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.** | | | | Batch ID: 15795 | | Analyst: WC |
| Diesel (Fuel Oil) | ND | 50.3 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Diesel Range Organics (C12-C24) | 125 | 50.3 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Heavy Oil | 1,210 | 101 | | µg/L | 1 | 1/4/2017 12:02:14 AM |
| Surr: 2-Fluorobiphenyl | 69.6 | 50-150 | | %Rec | 1 | 1/4/2017 12:02:14 AM |
| Surr: o-Terphenyl | 59.9 | 50-150 | | %Rec | 1 | 1/4/2017 12:02:14 AM |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| | | | | | | |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| Phenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Chlorophenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,3-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,4-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,2-Dichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzyl alcohol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-chloroethyl) ether | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Methylphenol (o-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachloroethane | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| N-Nitrosodi-n-propylamine | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Nitrobenzene | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Isophorone | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Methylphenol (p-cresol) | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Nitrophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dimethylphenol | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-chloroethoxy)methane | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1,2,4-Trichlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Naphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chloroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorobutadiene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chloro-3-methylphenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Methylnaphthalene | ND | 0.498 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 1-Methylnaphthalene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorocyclopentadiene | ND | 0.997 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4,6-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4,5-Trichlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Chloronaphthalene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2-Nitroaniline | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

## Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 15825 Analyst: BT

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dimethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,6-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Acenaphthylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dinitrophenol | ND | 1.99 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dibenzofuran | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 2,4-Dinitrotoluene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Nitrophenol | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Fluorene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Chlorophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Diethylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4,6-Dinitro-2-methylphenol | ND | 4.98 | Q | µg/L | 1 | 1/5/2017 8:44:19 PM |
| 4-Bromophenyl phenyl ether | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Hexachlorobenzene | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Pentachlorophenol | ND | 1.99 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Phenanthrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Carbazole | ND | 4.98 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Di-n-butyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzyl Butylphthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| bis(2-Ethylhexyl)adipate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benz[a]anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Chrysene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Bis(2-ethylhexyl) phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Di-n-octyl phthalate | ND | 0.997 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (b) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (k) fluoranthene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo[a]pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Indeno (1,2,3-cd) pyrene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Dibenzo (a,h) anthracene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Benzo (g,h,I) perylene | ND | 0.498 | | µg/L | 1 | 1/5/2017 8:44:19 PM |
| Surr: 2,4,6-Tribromophenol | 110 | 5-127 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: 2-Fluorobiphenyl | 60.7 | 24.1-139 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: Nitrobenzene-d5 | 79.7 | 21.9-139 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: Phenol-d6 | 70.3 | 10.3-128 | | %Rec | 1 | 1/5/2017 8:44:19 PM |
| Surr: p-Terphenyl | 59.1 | 25.2-132 | | %Rec | 1 | 1/5/2017 8:44:19 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds by EPA Method 8270** | | | | Batch ID: 15825 | | Analyst: BT |
| **NOTES:** Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF). | | | | | | |
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Surr: Toluene-d8 | 101 | 65-135 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: 4-Bromofluorobenzene | 97.0 | 65-135 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | Q | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Methylene chloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 2,2-Dichloropropane | ND | 2.00 | Q | µg/L | 1 | 1/4/2017 6:33:38 PM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chloroform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Carbon tetrachloride | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Benzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromodichloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Dibromomethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| cis-1,3-Dichloropropene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Toluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| trans-1,3-Dichloropropylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,2-Trichloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |

**Client:** Floyd | Snider
**Collection Date:** 12/28/2016 4:00:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Matrix:** Groundwater
**Client Sample ID:** **TWP16-PMW5B**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| 1,3-Dichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Tetrachloroethene (PCE) | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Dibromochloromethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Chlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Ethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| m,p-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| o-Xylene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Styrene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Isopropylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromoform | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| n-Propylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Bromobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 2-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 4-Chlorotoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| tert-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,3-Trichloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| sec-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 4-Isopropyltoluene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,3-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,4-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| n-Butylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dichlorobenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Hexachloro-1,3-butadiene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Naphthalene | ND | 1.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | µg/L | 1 | 1/4/2017 6:33:38 PM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: Toluene-d8 | 102 | 40.1-139 | | %Rec | 1 | 1/4/2017 6:33:38 PM |
| Surr: 1-Bromo-4-fluorobenzene | 97.3 | 64.2-128 | | %Rec | 1 | 1/4/2017 6:33:38 PM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Analytical Report

Work Order: **1612278**
Date Reported: **1/9/2017**

**Client:** Floyd | Snider
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-011
**Client Sample ID:** **TWP16-PMW5B**

**Collection Date:** 12/28/2016 4:00:00 PM
**Matrix:** Groundwater

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Dissolved Mercury by EPA Method 245.1** | | | | Batch ID: 15826 | | Analyst: WF |
| Mercury | ND | 0.100 | | µg/L | 1 | 1/3/2017 3:41:15 PM |
| **Dissolved Metals by EPA Method 200.8** | | | | Batch ID: 15820 | | Analyst: TN |
| Arsenic | 2.41 | 1.00 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Barium | 3.43 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Cadmium | ND | 0.200 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Chromium | 4.58 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Copper | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Lead | ND | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Nickel | 0.706 | 0.500 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| Zinc | ND | 1.50 | | µg/L | 1 | 1/3/2017 1:10:48 PM |
| **Hexavalent Chromium by EPA 7196 / SM 3500 Cr B** | | | | Batch ID: R33688 | | Analyst: KT |
| Chromium, Hexavalent | 0.0557 | 0.0500 | | mg/L | 1 | 12/29/2016 10:21:00 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/20/2016 2:59:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-012
**Matrix:** Water
**Client Sample ID:** **Trip Blank**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Gasoline by NWTPH-Gx** | | | | Batch ID: 15802 | | Analyst: NG |
| Gasoline | ND | 50.0 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Surr: Toluene-d8 | 101 | 65-135 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: 4-Bromofluorobenzene | 96.0 | 65-135 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15802 | | Analyst: NG |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Vinyl chloride | ND | 0.200 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromomethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Methylene chloride | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 2,2-Dichloropropane | ND | 2.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| cis-1,2-Dichloroethene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chloroform | 3.67 | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1-Dichloropropene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Carbon tetrachloride | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Benzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Trichloroethene (TCE) | ND | 0.500 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromodichloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Dibromomethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| cis-1,3-Dichloropropene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Toluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| trans-1,3-Dichloropropylene | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,2-Trichloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3-Dichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Tetrachloroethene (PCE) | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Dibromochloromethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Chlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |

**Client:** Floyd | Snider
**Collection Date:** 12/20/2016 2:59:00 PM
**Project:** Ave 55 - Taylor Way
**Lab ID:** 1612278-012
**Matrix:** Water
**Client Sample ID:** **Trip Blank**

## Volatile Organic Compounds by EPA Method 8260C

Batch ID: 15802 Analyst: NG

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| m,p-Xylene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| o-Xylene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Styrene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Isopropylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromoform | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| n-Propylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Bromobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3,5-Trimethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 2-Chlorotoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 4-Chlorotoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| tert-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,3-Trichloropropane | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,4-Trichlorobenzene | ND | 2.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| sec-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 4-Isopropyltoluene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,3-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,4-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| n-Butylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dichlorobenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | QH | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,4-Trimethylbenzene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Hexachloro-1,3-butadiene | ND | 4.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Naphthalene | ND | 1.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| 1,2,3-Trichlorobenzene | ND | 4.00 | H | µg/L | 1 | 1/4/2017 10:46:10 AM |
| Surr: Dibromofluoromethane | 100 | 45.4-152 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: Toluene-d8 | 103 | 40.1-139 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |
| Surr: 1-Bromo-4-fluorobenzene | 95.9 | 64.2-128 | H | %Rec | 1 | 1/4/2017 10:46:10 AM |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA 7196 / SM 3500 Cr B

| Sample ID | **MB-R33688** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639409** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID | **LCS-R33688** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639411** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.223 | 0.0500 | 0.2500 | 0 | 89.1 | 80 | 120 | | | | |

| Sample ID | **1612278-001EDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639393** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | | 30 | |

| Sample ID | **1612278-001EMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639395** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.0228 | 0.0500 | 0.2500 | 0.009700 | 5.24 | 65 | 135 | | | | S |

**NOTES:**
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

| Sample ID | **1612278-001EMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW1A** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639397** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.0209 | 0.0500 | 0.2500 | 0.009700 | 4.48 | 65 | 135 | 0 | | 30 | S |

**NOTES:**
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA 7196 / SM 3500 Cr B

| Sample ID | **1612278-003EMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2B** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639399** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.192 | 0.0500 | 0.2500 | 0 | 76.8 | 65 | 135 | | | | |

| Sample ID | **1612278-003EMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **12/29/2016** | | RunNo: **33688** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2B** | Batch ID: **R33688** | | | | | Analysis Date: **12/29/2016** | | SeqNo: **639400** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.182 | 0.0500 | 0.2500 | 0 | 72.7 | 65 | 135 | 0.1920 | 5.46 | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

| Sample ID | **MB-15816FB** | SampType: | **MBLK** | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33704** |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: | **15820** | | | Analysis Date: | **1/3/2017** | SeqNo: | **639666** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 1.00 | | | | | | | | | |
| Barium | ND | 0.500 | | | | | | | | | |
| Cadmium | ND | 0.200 | | | | | | | | | |
| Chromium | ND | 0.500 | | | | | | | | | |
| Copper | ND | 0.500 | | | | | | | | | |
| Lead | ND | 0.500 | | | | | | | | | |
| Nickel | ND | 0.500 | | | | | | | | | |
| Zinc | ND | 1.50 | | | | | | | | | |

**NOTES:**
Filter Blank

| Sample ID | **MB-15820** | SampType: | **MBLK** | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33704** |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: | **15820** | | | Analysis Date: | **1/3/2017** | SeqNo: | **639667** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 1.00 | | | | | | | | | |
| Barium | ND | 0.500 | | | | | | | | | |
| Cadmium | ND | 0.200 | | | | | | | | | |
| Chromium | ND | 0.500 | | | | | | | | | |
| Copper | ND | 0.500 | | | | | | | | | |
| Lead | ND | 0.500 | | | | | | | | | |
| Nickel | ND | 0.500 | | | | | | | | | |
| Zinc | ND | 1.50 | | | | | | | | | |

| Sample ID | **LCS-15820** | SampType: | **LCS** | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33704** |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **15820** | | | Analysis Date: | **1/3/2017** | SeqNo: | **639668** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 95.9 | 1.00 | 100.0 | 0 | 95.9 | 85 | 115 | | | | |
| Barium | 97.2 | 0.500 | 100.0 | 0 | 97.2 | 85 | 115 | | | | |
| Cadmium | 4.81 | 0.200 | 5.000 | 0 | 96.2 | 85 | 115 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

| Sample ID | **LCS-15820** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33704** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **15820** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639668** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium | 99.2 | 0.500 | 100.0 | 0 | 99.2 | 85 | 115 | | | | |
| Copper | 98.8 | 0.500 | 100.0 | 0 | 98.8 | 85 | 115 | | | | |
| Lead | 49.2 | 0.500 | 50.00 | 0 | 98.4 | 85 | 115 | | | | |
| Nickel | 98.3 | 0.500 | 100.0 | 0 | 98.3 | 85 | 115 | | | | |
| Zinc | 104 | 1.50 | 100.0 | 0 | 104 | 85 | 115 | | | | |

| Sample ID | **1612278-005DDUP** | SampType: **DUP** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33704** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15820** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639670** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 1.76 | 1.00 | | | | | | 1.650 | 6.71 | 30 | |
| Barium | 220 | 0.500 | | | | | | 235.0 | 6.37 | 30 | |
| Cadmium | ND | 0.200 | | | | | | 0 | | 30 | |
| Chromium | ND | 0.500 | | | | | | 0 | | 30 | |
| Copper | 0.510 | 0.500 | | | | | | 0.6950 | 30.7 | 30 | |
| Lead | ND | 0.500 | | | | | | 0 | | 30 | |
| Nickel | 0.867 | 0.500 | | | | | | 1.092 | 22.9 | 30 | |
| Zinc | 21.5 | 1.50 | | | | | | 23.98 | 10.8 | 30 | |

| Sample ID | **1612278-005DMS** | SampType: **MS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33704** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15820** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639671** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 507 | 1.00 | 500.0 | 1.650 | 101 | 70 | 130 | | | | |
| Barium | 723 | 0.500 | 500.0 | 235.0 | 97.6 | 70 | 130 | | | | |
| Cadmium | 26.3 | 0.200 | 25.00 | 0.02850 | 105 | 70 | 130 | | | | |
| Chromium | 502 | 0.500 | 500.0 | 0.09950 | 100 | 70 | 130 | | | | |
| Copper | 470 | 0.500 | 500.0 | 0.6950 | 93.8 | 70 | 130 | | | | |
| Lead | 229 | 0.500 | 250.0 | 0.1060 | 91.6 | 70 | 130 | | | | |
| Nickel | 485 | 0.500 | 500.0 | 1.092 | 96.7 | 70 | 130 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Metals by EPA Method 200.8

| Sample ID | **1612278-005DMS** | SampType: **MS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33704** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15820** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639671** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Zinc | 527 | 1.50 | 500.0 | 23.98 | 101 | 70 | 130 | | | | |

| Sample ID | **1612278-005DMSD** | SampType: **MSD** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33704** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: **15820** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639672** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 521 | 1.00 | 500.0 | 1.650 | 104 | 70 | 130 | 506.8 | 2.74 | 30 | |
| Barium | 721 | 0.500 | 500.0 | 235.0 | 97.1 | 70 | 130 | 723.0 | 0.341 | 30 | |
| Cadmium | 26.3 | 0.200 | 25.00 | 0.02850 | 105 | 70 | 130 | 26.33 | 0.198 | 30 | |
| Chromium | 500 | 0.500 | 500.0 | 0.09950 | 100 | 70 | 130 | 502.3 | 0.477 | 30 | |
| Copper | 477 | 0.500 | 500.0 | 0.6950 | 95.3 | 70 | 130 | 469.8 | 1.59 | 30 | |
| Lead | 225 | 0.500 | 250.0 | 0.1060 | 89.9 | 70 | 130 | 229.1 | 1.80 | 30 | |
| Nickel | 484 | 0.500 | 500.0 | 1.092 | 96.5 | 70 | 130 | 484.7 | 0.223 | 30 | |
| Zinc | 542 | 1.50 | 500.0 | 23.98 | 104 | 70 | 130 | 527.4 | 2.69 | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Mercury by EPA Method 245.1

| Sample ID | **MB-15826** | SampType: | **MBLK** | | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33698** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: | **15826** | | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639816** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.100 | | | | | | | | | |

| Sample ID | **LCS-15826** | SampType: | **LCS** | | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33698** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **15826** | | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639817** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 2.67 | 0.100 | 2.500 | 0 | 107 | 85 | 115 | | | | |

| Sample ID | **1612278-005DDUP** | SampType: | **DUP** | | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33698** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: | **15826** | | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639823** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.100 | | | | | | 0 | | 20 | |

| Sample ID | **1612278-005DMS** | SampType: | **MS** | | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33698** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: | **15826** | | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639824** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 2.66 | 0.100 | 2.500 | 0 | 106 | 80 | 120 | | | | |

| Sample ID | **1612278-005DMSD** | SampType: | **MSD** | | | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33698** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **TWP16-PMW2A** | Batch ID: | **15826** | | | | | Analysis Date: | **1/3/2017** | SeqNo: | **639825** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 2.63 | 0.100 | 2.500 | 0 | 105 | 80 | 120 | 2.660 | 1.13 | 20 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Mercury by EPA Method 245.1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID **MB-15816FB** | SampType: **MBLK** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33698** | |
| Client ID: **MBLKW** | Batch ID: **15826** | | | | | Analysis Date: **1/3/2017** | | SeqNo: **639833** | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | ND | 0.100 | | | | | | | | | |

**NOTES:**
Filter Blank

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

| Sample ID **MB-15795** | SampType: **MBLK** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640128** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | ND | 50.0 | | | | | | | | | |
| Heavy Oil | ND | 100 | | | | | | | | | |
| Surr: 2-Fluorobiphenyl | 43.9 | | 80.07 | | 54.8 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 52.2 | | 80.07 | | 65.2 | 50 | 150 | | | | |

| Sample ID **LCS-15795** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640127** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 774 | 50.0 | 999.7 | 0 | 77.5 | 65 | 135 | | | | |
| Surr: 2-Fluorobiphenyl | 66.8 | | 79.97 | | 83.6 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 77.2 | | 79.97 | | 96.6 | 50 | 150 | | | | |

| Sample ID **1612278-001BDUP** | SampType: **DUP** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW1A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640108** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | ND | 49.8 | | | | | | 0 | | 30 | |
| Diesel Range Organics (C12-C24) | 480 | 49.8 | | | | | | 482.5 | 0.467 | 30 | |
| Heavy Oil | 1,080 | 99.5 | | | | | | 943.2 | 13.6 | 30 | |
| Surr: 2-Fluorobiphenyl | 61.7 | | 79.62 | | 77.5 | 50 | 150 | | 0 | | |
| Surr: o-Terphenyl | 69.6 | | 79.62 | | 87.4 | 50 | 150 | | 0 | | |

**NOTES:**
DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

| Sample ID **1612278-005BMS** | SampType: **MS** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW2A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640113** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 695 | 50.3 | 1,005 | 0 | 69.1 | 65 | 135 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

| Sample ID **1612278-005BMS** | SampType: **MS** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW2A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640113** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Surr: 2-Fluorobiphenyl | 64.6 | | 80.43 | | 80.3 | 50 | 150 | | | | |
| Surr: o-Terphenyl | 70.2 | | 80.43 | | 87.3 | 50 | 150 | | | | |

| Sample ID **1612278-005BMSD** | SampType: **MSD** | | | Units: **µg/L** | | Prep Date: **12/29/2016** | | RunNo: **33723** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TWP16-PMW2A** | Batch ID: **15795** | | | | | Analysis Date: **12/30/2016** | | SeqNo: **640114** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Diesel (Fuel Oil) | 663 | 50.1 | 1,002 | 0 | 66.1 | 65 | 135 | 694.8 | 4.77 | 30 | |
| Surr: 2-Fluorobiphenyl | 60.4 | | 80.14 | | 75.4 | 50 | 150 | | 0 | | |
| Surr: o-Terphenyl | 62.9 | | 80.14 | | 78.5 | 50 | 150 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Dissolved Gases by RSK-175

| Sample ID | LCS-R33761 | SampType: | LCS | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R33761 | | | Analysis Date: | 1/6/2017 | SeqNo: | 641164 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methane | 0.410 | 0.00500 | 0.5000 | 0 | 82.0 | 80 | 120 | | | | |

| Sample ID | MB-R33761 | SampType: | MBLK | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | MBLKW | Batch ID: | R33761 | | | Analysis Date: | 1/6/2017 | SeqNo: | 641166 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.00500 | | | | | | | | | |

| Sample ID | 1612278-001AREP | SampType: | REP | Units: | mg/L | Prep Date: | 1/6/2017 | RunNo: | 33761 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW1A | Batch ID: | R33761 | | | Analysis Date: | 1/6/2017 | SeqNo: | 641148 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methane | 6.29 | 0.00500 | | | | | | 6.293 | 0.119 | 30 | E |

**NOTES:**
E - Estimated value. The amount exceeds the linear working range of the instrument.

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

| Sample ID | **MB-15825** | SampType: | **MBLK** | Units: | **µg/L** | Prep Date: | **1/3/2017** | RunNo: | **33768** |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **MBLKW** | Batch ID: | **15825** | | | Analysis Date: | **1/5/2017** | SeqNo: | **641337** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | ND | 4.96 | | | | | | | | | |
| Phenol | ND | 1.98 | | | | | | | | | |
| 2-Chlorophenol | ND | 0.992 | | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 4.96 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.992 | | | | | | | | | |
| Benzyl alcohol | ND | 0.992 | | | | | | | | | |
| Bis(2-chloroethyl) ether | ND | 1.98 | | | | | | | | | |
| 2-Methylphenol (o-cresol) | ND | 0.992 | | | | | | | | | |
| Hexachloroethane | ND | 0.992 | | | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.992 | | | | | | | | | |
| Nitrobenzene | ND | 1.98 | | | | | | | | | |
| Isophorone | ND | 0.992 | | | | | | | | | |
| 4-Methylphenol (p-cresol) | ND | 0.992 | | | | | | | | | |
| 2-Nitrophenol | ND | 1.98 | | | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.992 | | | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.992 | | | | | | | | | |
| 2,4-Dichlorophenol | ND | 1.98 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.992 | | | | | | | | | |
| Naphthalene | ND | 0.496 | | | | | | | | | |
| 4-Chloroaniline | ND | 4.96 | | | | | | | | | |
| Hexachlorobutadiene | ND | 0.992 | | | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 4.96 | | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.496 | | | | | | | | | Q |
| 1-Methylnaphthalene | ND | 0.496 | | | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.992 | | | | | | | | | Q |
| 2,4,6-Trichlorophenol | ND | 1.98 | | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 1.98 | | | | | | | | | |
| 2-Chloronaphthalene | ND | 0.992 | | | | | | | | | |
| 2-Nitroaniline | ND | 4.96 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **MB-15825** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **MBLKW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641337**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 0.496 | | | | | | | | | |
| Dimethylphthalate | ND | 0.992 | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.992 | | | | | | | | | |
| Acenaphthylene | ND | 0.496 | | | | | | | | | |
| 2,4-Dinitrophenol | ND | 1.98 | | | | | | | | | Q |
| Dibenzofuran | ND | 0.992 | | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.992 | | | | | | | | | |
| 4-Nitrophenol | ND | 4.96 | | | | | | | | | |
| Fluorene | ND | 0.496 | | | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.992 | | | | | | | | | |
| Diethylphthalate | ND | 0.992 | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 4.96 | | | | | | | | | Q |
| 4-Bromophenyl phenyl ether | ND | 0.992 | | | | | | | | | |
| Hexachlorobenzene | ND | 0.992 | | | | | | | | | |
| Pentachlorophenol | ND | 1.98 | | | | | | | | | |
| Phenanthrene | ND | 0.496 | | | | | | | | | |
| Anthracene | ND | 0.496 | | | | | | | | | |
| Carbazole | ND | 4.96 | | | | | | | | | |
| Di-n-butyl phthalate | ND | 0.992 | | | | | | | | | |
| Fluoranthene | ND | 0.496 | | | | | | | | | |
| Pyrene | ND | 0.496 | | | | | | | | | |
| Benzyl Butylphthalate | ND | 0.992 | | | | | | | | | |
| bis(2-Ethylhexyl)adipate | ND | 0.992 | | | | | | | | | |
| Benz[a]anthracene | ND | 0.496 | | | | | | | | | |
| Chrysene | ND | 0.496 | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ND | 0.992 | | | | | | | | | |
| Di-n-octyl phthalate | ND | 0.992 | | | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.496 | | | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.496 | | | | | | | | | |
| Benzo[a]pyrene | ND | 0.496 | | | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.496 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **MB-15825** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **MBLKW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641337**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo (a,h) anthracene | ND | 0.496 | | | | | | | | | |
| Benzo (g,h,I) perylene | ND | 0.496 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 3.18 | | 3.967 | | 80.2 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.26 | | 1.983 | | 63.5 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 1.52 | | 1.983 | | 76.8 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 2.36 | | 3.967 | | 59.4 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.37 | | 1.983 | | 68.9 | 25.2 | 132 | | | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 2.70 | 5.02 | 4.012 | 0 | 67.3 | 25 | 94.9 | | | | |
| Phenol | 1.48 | 2.01 | 4.012 | 0 | 36.8 | 10 | 63.1 | | | | |
| 2-Chlorophenol | 2.04 | 1.00 | 4.012 | 0 | 50.8 | 25 | 112 | | | | |
| N-Nitrosodiphenylamine | N/A | 5.02 | 4.012 | 0 | 0 | 25 | 94.9 | | | | S |
| 1,3-Dichlorobenzene | 2.16 | 1.00 | 4.012 | 0 | 53.7 | 25 | 108 | | | | |
| 1,4-Dichlorobenzene | 2.17 | 1.00 | 4.012 | 0 | 54.1 | 25 | 110 | | | | |
| 1,2-Dichlorobenzene | 2.18 | 1.00 | 4.012 | 0 | 54.3 | 25 | 109 | | | | |
| Benzyl alcohol | 2.05 | 1.00 | 4.012 | 0 | 51.1 | 20 | 96.5 | | | | |
| Bis(2-chloroethyl) ether | 2.39 | 2.01 | 4.012 | 0 | 59.5 | 25 | 111 | | | | |
| 2-Methylphenol (o-cresol) | 1.95 | 1.00 | 4.012 | 0 | 48.5 | 25 | 101 | | | | |
| Hexachloroethane | 2.19 | 1.00 | 4.012 | 0 | 54.6 | 25 | 109 | | | | |
| N-Nitrosodi-n-propylamine | 2.98 | 1.00 | 4.012 | 0 | 74.4 | 25 | 122 | | | | |
| Nitrobenzene | 2.43 | 2.01 | 4.012 | 0 | 60.7 | 25 | 110 | | | | |
| Isophorone | 2.58 | 1.00 | 4.012 | 0 | 64.2 | 25 | 126 | | | | |
| 4-Methylphenol (p-cresol) | 1.02 | 1.00 | 2.006 | 0 | 51.0 | 5 | 100 | | | | |
| 2-Nitrophenol | 1.93 | 2.01 | 4.012 | 0 | 48.0 | 25 | 126 | | | | |
| 2,4-Dimethylphenol | 2.38 | 1.00 | 4.012 | 0 | 59.4 | 25 | 124 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroethoxy)methane | 2.49 | 1.00 | 4.012 | 0 | 62.2 | 25 | 121 | | | | |
| 2,4-Dichlorophenol | 2.51 | 2.01 | 4.012 | 0 | 62.6 | 29.1 | 110 | | | | |
| 1,2,4-Trichlorobenzene | 2.22 | 1.00 | 4.012 | 0 | 55.3 | 25 | 113 | | | | |
| Naphthalene | 2.45 | 0.502 | 4.012 | 0 | 61.1 | 25 | 115 | | | | |
| 4-Chloroaniline | 2.15 | 5.02 | 4.012 | 0 | 53.6 | 10 | 113 | | | | |
| Hexachlorobutadiene | 2.32 | 1.00 | 4.012 | 0 | 57.7 | 25 | 111 | | | | |
| 4-Chloro-3-methylphenol | 3.51 | 5.02 | 4.012 | 0 | 87.5 | 32.3 | 122 | | | | |
| 2-Methylnaphthalene | 2.59 | 0.502 | 4.012 | 0 | 64.6 | 25 | 119 | | | | |
| 1-Methylnaphthalene | 2.50 | 0.502 | 4.012 | 0 | 62.3 | 25 | 117 | | | | |
| Hexachlorocyclopentadiene | 2.53 | 1.00 | 4.012 | 0 | 63.0 | 25 | 125 | | | | |
| 2,4,6-Trichlorophenol | 2.48 | 2.01 | 4.012 | 0 | 61.7 | 25 | 133 | | | | |
| 2,4,5-Trichlorophenol | 2.86 | 2.01 | 4.012 | 0 | 71.3 | 25 | 125 | | | | |
| 2-Chloronaphthalene | 2.59 | 1.00 | 4.012 | 0 | 64.5 | 25 | 121 | | | | |
| 2-Nitroaniline | 3.38 | 5.02 | 4.012 | 0 | 84.3 | 25 | 121 | | | | |
| Acenaphthene | 2.72 | 0.502 | 4.012 | 0 | 67.8 | 25 | 120 | | | | |
| Dimethylphthalate | 2.86 | 1.00 | 4.012 | 0 | 71.4 | 25 | 133 | | | | |
| 2,6-Dinitrotoluene | 3.05 | 1.00 | 4.012 | 0 | 76.1 | 25 | 131 | | | | |
| Acenaphthylene | 2.67 | 0.502 | 4.012 | 0 | 66.5 | 25 | 128 | | | | |
| 2,4-Dinitrophenol | 3.25 | 2.01 | 8.025 | 0 | 40.5 | 10 | 121 | | | | |
| Dibenzofuran | 2.76 | 1.00 | 4.012 | 0 | 68.8 | 25 | 121 | | | | |
| 2,4-Dinitrotoluene | 3.17 | 1.00 | 4.012 | 0 | 79.0 | 25 | 132 | | | | |
| 4-Nitrophenol | 2.55 | 5.02 | 4.012 | 0 | 63.6 | 5 | 141 | | | | |
| Fluorene | 2.70 | 0.502 | 4.012 | 0 | 67.3 | 25 | 127 | | | | |
| 4-Chlorophenyl phenyl ether | 2.66 | 1.00 | 4.012 | 0 | 66.3 | 25 | 124 | | | | |
| Diethylphthalate | 3.02 | 1.00 | 4.012 | 0 | 75.3 | 31.3 | 142 | | | | |
| 4,6-Dinitro-2-methylphenol | 2.72 | 5.02 | 4.012 | 0 | 67.7 | 10 | 118 | | | | |
| 4-Bromophenyl phenyl ether | 2.63 | 1.00 | 4.012 | 0 | 65.5 | 25 | 130 | | | | |
| Hexachlorobenzene | 2.82 | 1.00 | 4.012 | 0 | 70.3 | 29 | 120 | | | | |
| Pentachlorophenol | 2.55 | 2.01 | 4.012 | 0 | 63.6 | 10 | 117 | | | | |
| Phenanthrene | 2.91 | 0.502 | 4.012 | 0 | 72.5 | 32.6 | 104 | | | | |
| Anthracene | 2.81 | 0.502 | 4.012 | 0 | 69.9 | 27.7 | 134 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **LCS-15825** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **LCSW** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641338**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbazole | 3.06 | 5.02 | 4.012 | 0 | 76.2 | 27.9 | 150 | | | | |
| Di-n-butyl phthalate | 3.30 | 1.00 | 4.012 | 0 | 82.3 | 28.6 | 121 | | | | |
| Fluoranthene | 3.04 | 0.502 | 4.012 | 0 | 75.8 | 34.8 | 143 | | | | |
| Pyrene | 2.99 | 0.502 | 4.012 | 0 | 74.5 | 31.9 | 109 | | | | |
| Benzyl Butylphthalate | 3.56 | 1.00 | 4.012 | 0 | 88.8 | 43.8 | 119 | | | | |
| bis(2-Ethylhexyl)adipate | 3.20 | 1.00 | 4.012 | 0 | 79.7 | 38.1 | 140 | | | | |
| Benz[a]anthracene | 3.17 | 0.502 | 4.012 | 0 | 78.9 | 27.2 | 132 | | | | |
| Chrysene | 3.05 | 0.502 | 4.012 | 0 | 75.9 | 31.3 | 107 | | | | |
| Bis(2-ethylhexyl) phthalate | 3.35 | 1.00 | 4.012 | 0 | 83.6 | 36.2 | 123 | | | | |
| Di-n-octyl phthalate | 3.49 | 1.00 | 4.012 | 0 | 87.0 | 40.1 | 149 | | | | |
| Benzo (b) fluoranthene | 3.47 | 0.502 | 4.012 | 0 | 86.4 | 32.5 | 119 | | | | |
| Benzo (k) fluoranthene | 3.46 | 0.502 | 4.012 | 0 | 86.3 | 25 | 144 | | | | |
| Benzo[a]pyrene | 3.58 | 0.502 | 4.012 | 0 | 89.3 | 24.9 | 125 | | | | |
| Indeno (1,2,3-cd) pyrene | 3.40 | 0.502 | 4.012 | 0 | 84.6 | 25 | 127 | | | | |
| Dibenzo (a,h) anthracene | 3.50 | 0.502 | 4.012 | 0 | 87.1 | 25 | 132 | | | | |
| Benzo (g,h,I) perylene | 3.68 | 0.502 | 4.012 | 0 | 91.8 | 25 | 133 | | | | |
| Surr: 2,4,6-Tribromophenol | 3.52 | | 4.012 | | 87.7 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.06 | | 2.006 | | 52.7 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 0.996 | | 2.006 | | 49.7 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 1.89 | | 4.012 | | 47.2 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.16 | | 2.006 | | 57.7 | 25.2 | 132 | | | | |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | ND | 5.02 | | | | | | 0 | | 50 | |
| Phenol | 23.5 | 2.01 | | | | | | 24.15 | 2.81 | 50 | E |
| 2-Chlorophenol | ND | 1.00 | | | | | | 0 | | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N-Nitrosodiphenylamine | ND | 5.02 | | | | | | 0 | | 50 | |
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Benzyl alcohol | ND | 1.00 | | | | | | 0 | | 50 | |
| Bis(2-chloroethyl) ether | ND | 2.01 | | | | | | 0 | | 50 | |
| 2-Methylphenol (o-cresol) | ND | 1.00 | | | | | | 0 | | 50 | |
| Hexachloroethane | ND | 1.00 | | | | | | 0 | | 50 | |
| N-Nitrosodi-n-propylamine | ND | 1.00 | | | | | | 0 | | 50 | |
| Nitrobenzene | 4.67 | 2.01 | | | | | | 5.506 | 16.4 | 50 | |
| Isophorone | 1.55 | 1.00 | | | | | | 1.631 | 5.34 | 50 | |
| 4-Methylphenol (p-cresol) | ND | 1.00 | | | | | | 0 | | 50 | |
| 2-Nitrophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2,4-Dimethylphenol | ND | 1.00 | | | | | | 0 | | 50 | |
| Bis(2-chloroethoxy)methane | ND | 1.00 | | | | | | 0 | | 50 | |
| 2,4-Dichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 1,2,4-Trichlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Naphthalene | ND | 0.502 | | | | | | 0 | | 50 | |
| 4-Chloroaniline | ND | 5.02 | | | | | | 0 | | 50 | |
| Hexachlorobutadiene | ND | 1.00 | | | | | | 0 | | 50 | |
| 4-Chloro-3-methylphenol | ND | 5.02 | | | | | | 0 | | 50 | |
| 2-Methylnaphthalene | 0.820 | 0.502 | | | | | | 1.016 | 21.4 | 50 | Q |
| 1-Methylnaphthalene | ND | 0.502 | | | | | | 0.6932 | 40.8 | 50 | |
| Hexachlorocyclopentadiene | ND | 1.00 | | | | | | 0 | | 50 | Q |
| 2,4,6-Trichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2,4,5-Trichlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| 2-Chloronaphthalene | ND | 1.00 | | | | | | 0 | | 50 | |
| 2-Nitroaniline | ND | 5.02 | | | | | | 0 | | 50 | |
| Acenaphthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Dimethylphthalate | 3.15 | 1.00 | | | | | | 3.280 | 4.11 | 50 | |
| 2,6-Dinitrotoluene | ND | 1.00 | | | | | | 0 | | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | ND | 0.502 | | | | | | 0 | | 50 | |
| 2,4-Dinitrophenol | ND | 2.01 | | | | | | 0 | | 50 | Q |
| Dibenzofuran | ND | 1.00 | | | | | | 0 | | 50 | |
| 2,4-Dinitrotoluene | ND | 1.00 | | | | | | 0 | | 50 | |
| 4-Nitrophenol | ND | 5.02 | | | | | | 0 | | 50 | |
| Fluorene | ND | 0.502 | | | | | | 0 | | 50 | |
| 4-Chlorophenyl phenyl ether | ND | 1.00 | | | | | | 0 | | 50 | |
| Diethylphthalate | 3.13 | 1.00 | | | | | | 3.684 | 16.3 | 50 | |
| 4,6-Dinitro-2-methylphenol | ND | 5.02 | | | | | | 0 | | 50 | Q |
| 4-Bromophenyl phenyl ether | ND | 1.00 | | | | | | 0 | | 50 | |
| Hexachlorobenzene | ND | 1.00 | | | | | | 0 | | 50 | |
| Pentachlorophenol | ND | 2.01 | | | | | | 0 | | 50 | |
| Phenanthrene | 1.23 | 0.502 | | | | | | 1.365 | 10.0 | 50 | |
| Anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Carbazole | ND | 5.02 | | | | | | 0 | | 50 | |
| Di-n-butyl phthalate | ND | 1.00 | | | | | | 0 | | 50 | |
| Fluoranthene | 1.25 | 0.502 | | | | | | 1.344 | 7.46 | 50 | |
| Pyrene | 1.03 | 0.502 | | | | | | 1.039 | 0.893 | 50 | |
| Benzyl Butylphthalate | ND | 1.00 | | | | | | 0 | | 50 | |
| bis(2-Ethylhexyl)adipate | ND | 1.00 | | | | | | 0 | | 50 | |
| Benz[a]anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Chrysene | ND | 0.502 | | | | | | 0 | | 50 | |
| Di-n-octyl phthalate | 1.41 | 1.00 | | | | | | 1.261 | 11.4 | 50 | |
| Benzo (b) fluoranthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo (k) fluoranthene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo[a]pyrene | ND | 0.502 | | | | | | 0 | | 50 | |
| Indeno (1,2,3-cd) pyrene | ND | 0.502 | | | | | | 0 | | 50 | |
| Dibenzo (a,h) anthracene | ND | 0.502 | | | | | | 0 | | 50 | |
| Benzo (g,h,I) perylene | ND | 0.502 | | | | | | 0 | | 50 | |
| Surr: 2,4,6-Tribromophenol | 4.13 | | 4.019 | | 103 | 5 | 127 | | 0 | | |
| Surr: 2-Fluorobiphenyl | 1.31 | | 2.009 | | 65.1 | 24.1 | 139 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-001FDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641343**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Nitrobenzene-d5 | 1.57 | | 2.009 | | 77.9 | 21.9 | 139 | | 0 | | |
| Surr: Phenol-d6 | 4.31 | | 4.019 | | 107 | 10.3 | 128 | | 0 | | |
| Surr: p-Terphenyl | 1.48 | | 2.009 | | 73.4 | 25.2 | 132 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 3.75 | 5.03 | 4.025 | 0.2076 | 87.9 | 5 | 159 | | | | |
| Phenol | 24.6 | 2.01 | 4.025 | 21.53 | 77.1 | 5 | 94.5 | | | | |
| 2-Chlorophenol | 3.16 | 1.01 | 4.025 | 0 | 78.4 | 10.4 | 100 | | | | |
| N-Nitrosodiphenylamine | N/A | 5.03 | 4.025 | 0 | 0 | 5 | 66.4 | | | | S |
| 1,3-Dichlorobenzene | 2.92 | 1.01 | 4.025 | 0 | 72.5 | 23 | 94.8 | | | | |
| 1,4-Dichlorobenzene | 2.82 | 1.01 | 4.025 | 0 | 70.1 | 23.8 | 95.2 | | | | |
| 1,2-Dichlorobenzene | 2.84 | 1.01 | 4.025 | 0 | 70.6 | 25.5 | 96.9 | | | | |
| Benzyl alcohol | 4.23 | 1.01 | 4.025 | 0 | 105 | 5 | 139 | | | | |
| Bis(2-chloroethyl) ether | 4.08 | 2.01 | 4.025 | 0 | 101 | 22 | 109 | | | | |
| 2-Methylphenol (o-cresol) | 4.33 | 1.01 | 4.025 | 0 | 107 | 5 | 106 | | | | S |
| Hexachloroethane | 2.83 | 1.01 | 4.025 | 0 | 70.4 | 9.62 | 104 | | | | |
| N-Nitrosodi-n-propylamine | 5.01 | 1.01 | 4.025 | 0 | 125 | 23.7 | 124 | | | | S |
| Nitrobenzene | 8.89 | 2.01 | 4.025 | 5.032 | 95.9 | 10.6 | 137 | | | | |
| Isophorone | 5.31 | 1.01 | 4.025 | 1.400 | 97.1 | 22.9 | 124 | | | | |
| 4-Methylphenol (p-cresol) | 0.883 | 1.01 | 2.012 | 0 | 43.9 | 5 | 119 | | | | |
| 2-Nitrophenol | 3.68 | 2.01 | 4.025 | 0 | 91.4 | 13.6 | 125 | | | | |
| 2,4-Dimethylphenol | 5.78 | 1.01 | 4.025 | 0 | 144 | 5 | 126 | | | | S |
| Bis(2-chloroethoxy)methane | 3.72 | 1.01 | 4.025 | 0 | 92.4 | 27 | 115 | | | | |
| 2,4-Dichlorophenol | 0.261 | 2.01 | 4.025 | 0 | 6.49 | 12.1 | 126 | | | | S |
| 1,2,4-Trichlorobenzene | 3.00 | 1.01 | 4.025 | 0.01534 | 74.2 | 25 | 110 | | | | |
| Naphthalene | 4.72 | 0.503 | 4.025 | 0 | 117 | 23.5 | 108 | | | | S |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4-Chloroaniline | 1.36 | 5.03 | 4.025 | 0 | 33.8 | 5 | 110 | | | | |
| Hexachlorobutadiene | 3.07 | 1.01 | 4.025 | 0 | 76.4 | 23.6 | 98.8 | | | | |
| 4-Chloro-3-methylphenol | 1.72 | 5.03 | 4.025 | 0 | 42.8 | 5 | 139 | | | | |
| 2-Methylnaphthalene | 3.49 | 0.503 | 4.025 | 0.5083 | 74.2 | 26.1 | 118 | | | | |
| 1-Methylnaphthalene | 3.43 | 0.503 | 4.025 | 0.3337 | 76.9 | 27.5 | 116 | | | | |
| Hexachlorocyclopentadiene | ND | 1.01 | 4.025 | 0 | 0 | 5 | 126 | | | | S |
| 2,4,6-Trichlorophenol | 3.71 | 2.01 | 4.025 | 0 | 92.3 | 10.5 | 124 | | | | |
| 2,4,5-Trichlorophenol | 4.06 | 2.01 | 4.025 | 0 | 101 | 5 | 144 | | | | |
| 2-Chloronaphthalene | 3.29 | 1.01 | 4.025 | 0 | 81.8 | 27 | 117 | | | | |
| 2-Nitroaniline | 4.94 | 5.03 | 4.025 | 0 | 123 | 5.48 | 142 | | | | |
| Acenaphthene | 3.81 | 0.503 | 4.025 | 0 | 94.7 | 29.3 | 117 | | | | |
| Dimethylphthalate | 6.15 | 1.01 | 4.025 | 2.846 | 82.0 | 24 | 132 | | | | |
| 2,6-Dinitrotoluene | 3.80 | 1.01 | 4.025 | 0 | 94.4 | 22 | 129 | | | | |
| Acenaphthylene | 3.18 | 0.503 | 4.025 | 0 | 79.0 | 25.1 | 121 | | | | |
| 2,4-Dinitrophenol | ND | 2.01 | 8.049 | 0 | 0 | 5 | 172 | | | | S |
| Dibenzofuran | 3.85 | 1.01 | 4.025 | 0 | 95.7 | 27.8 | 116 | | | | |
| 2,4-Dinitrotoluene | 4.10 | 1.01 | 4.025 | 0 | 102 | 24.4 | 124 | | | | |
| 4-Nitrophenol | ND | 5.03 | 4.025 | 0 | 0 | 5 | 120 | | | | S |
| Fluorene | 3.65 | 0.503 | 4.025 | 0.1396 | 87.2 | 27.6 | 123 | | | | |
| 4-Chlorophenyl phenyl ether | 3.59 | 1.01 | 4.025 | 0 | 89.3 | 28.6 | 117 | | | | |
| Diethylphthalate | 7.43 | 1.01 | 4.025 | 3.324 | 102 | 27.4 | 137 | | | | |
| 4,6-Dinitro-2-methylphenol | 1.92 | 5.03 | 4.025 | 0 | 47.7 | 5 | 134 | | | | |
| 4-Bromophenyl phenyl ether | 3.81 | 1.01 | 4.025 | 0 | 94.7 | 32.2 | 120 | | | | |
| Hexachlorobenzene | 3.54 | 1.01 | 4.025 | 0 | 87.8 | 28.3 | 114 | | | | |
| Pentachlorophenol | 6.12 | 2.01 | 4.025 | 0 | 152 | 5 | 153 | | | | |
| Phenanthrene | 3.80 | 0.503 | 4.025 | 0.2654 | 87.9 | 29.7 | 120 | | | | |
| Anthracene | 3.67 | 0.503 | 4.025 | 0 | 91.2 | 22.1 | 125 | | | | |
| Carbazole | 3.89 | 5.03 | 4.025 | 0.1863 | 92.1 | 31 | 133 | | | | |
| Di-n-butyl phthalate | 4.87 | 1.01 | 4.025 | 0.8816 | 99.0 | 34.3 | 138 | | | | |
| Fluoranthene | 3.70 | 0.503 | 4.025 | 0.3242 | 83.9 | 33.3 | 137 | | | | |
| Pyrene | 3.55 | 0.503 | 4.025 | 0.1698 | 83.9 | 31.4 | 132 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMS** SampType: **MS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641345**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzyl Butylphthalate | 4.28 | 1.01 | 4.025 | 0 | 106 | 37.7 | 159 | | | | |
| bis(2-Ethylhexyl)adipate | 3.05 | 1.01 | 4.025 | 0 | 75.7 | 5 | 159 | | | | |
| Benz[a]anthracene | 3.52 | 0.503 | 4.025 | 0.08903 | 85.1 | 26.5 | 136 | | | | |
| Chrysene | 3.29 | 0.503 | 4.025 | 0.1221 | 78.8 | 22.2 | 126 | | | | |
| Bis(2-ethylhexyl) phthalate | 7.11 | 1.01 | 4.025 | 4.277 | 70.3 | 5 | 162 | | | | |
| Di-n-octyl phthalate | 3.86 | 1.01 | 4.025 | 0.3835 | 86.3 | 5 | 175 | | | | |
| Benzo (b) fluoranthene | 3.86 | 0.503 | 4.025 | 0.08677 | 93.7 | 20 | 139 | | | | |
| Benzo (k) fluoranthene | 3.17 | 0.503 | 4.025 | 0.09953 | 76.3 | 13 | 134 | | | | |
| Benzo[a]pyrene | 3.48 | 0.503 | 4.025 | 0.06363 | 84.9 | 5 | 144 | | | | |
| Indeno (1,2,3-cd) pyrene | 2.70 | 0.503 | 4.025 | 0.03918 | 66.2 | 5 | 144 | | | | |
| Dibenzo (a,h) anthracene | 2.75 | 0.503 | 4.025 | 0.02940 | 67.6 | 10.3 | 145 | | | | |
| Benzo (g,h,I) perylene | 2.68 | 0.503 | 4.025 | 0.04867 | 65.3 | 5 | 135 | | | | |
| Surr: 2,4,6-Tribromophenol | 4.49 | | 4.025 | | 112 | 5 | 127 | | | | |
| Surr: 2-Fluorobiphenyl | 1.21 | | 2.012 | | 60.3 | 24.1 | 139 | | | | |
| Surr: Nitrobenzene-d5 | 1.91 | | 2.012 | | 95.1 | 21.9 | 139 | | | | |
| Surr: Phenol-d6 | 4.42 | | 4.025 | | 110 | 10.3 | 128 | | | | |
| Surr: p-Terphenyl | 1.31 | | 2.012 | | 65.1 | 25.2 | 132 | | | | |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphenylamine | 3.45 | 4.95 | 3.959 | 0.2076 | 82.0 | 5 | 159 | 0 | | 0 | |
| Phenol | 24.1 | 1.98 | 3.959 | 21.53 | 64.8 | 5 | 94.5 | 24.63 | 2.20 | 50 | |
| 2-Chlorophenol | 2.89 | 0.990 | 3.959 | 0 | 73.1 | 10.4 | 100 | 3.156 | 8.67 | 50 | |
| N-Nitrosodiphenylamine | N/A | 4.95 | 3.959 | 0 | 0 | 5 | 66.4 | 0 | | 0 | S |
| 1,3-Dichlorobenzene | 2.58 | 0.990 | 3.959 | 0 | 65.2 | 23 | 94.8 | 2.920 | 12.3 | 50 | |
| 1,4-Dichlorobenzene | 2.42 | 0.990 | 3.959 | 0 | 61.1 | 23.8 | 95.2 | 2.821 | 15.3 | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichlorobenzene | 2.48 | 0.990 | 3.959 | 0 | 62.7 | 25.5 | 96.9 | 2.841 | 13.4 | 50 | |
| Benzyl alcohol | 3.99 | 0.990 | 3.959 | 0 | 101 | 5 | 139 | 4.230 | 5.72 | 50 | |
| Bis(2-chloroethyl) ether | 4.48 | 1.98 | 3.959 | 0 | 113 | 22 | 109 | 4.078 | 9.40 | 50 | S |
| 2-Methylphenol (o-cresol) | 3.88 | 0.990 | 3.959 | 0 | 98.0 | 5 | 106 | 4.326 | 10.9 | 50 | |
| Hexachloroethane | 2.46 | 0.990 | 3.959 | 0 | 62.2 | 9.62 | 104 | 2.834 | 14.1 | 50 | |
| N-Nitrosodi-n-propylamine | 4.70 | 0.990 | 3.959 | 0 | 119 | 23.7 | 124 | 5.013 | 6.53 | 50 | |
| Nitrobenzene | 8.51 | 1.98 | 3.959 | 5.032 | 87.9 | 10.6 | 137 | 8.892 | 4.35 | 50 | |
| Isophorone | 4.54 | 0.990 | 3.959 | 1.400 | 79.2 | 22.9 | 124 | 5.309 | 15.7 | 50 | |
| 4-Methylphenol (p-cresol) | 0.868 | 0.990 | 1.979 | 0 | 43.8 | 5 | 119 | 0 | | 50 | |
| 2-Nitrophenol | 3.27 | 1.98 | 3.959 | 0 | 82.6 | 13.6 | 125 | 3.677 | 11.7 | 50 | |
| 2,4-Dimethylphenol | 5.03 | 0.990 | 3.959 | 0 | 127 | 5 | 126 | 5.777 | 13.8 | 50 | S |
| Bis(2-chloroethoxy)methane | 3.45 | 0.990 | 3.959 | 0 | 87.2 | 27 | 115 | 3.719 | 7.47 | 50 | |
| 2,4-Dichlorophenol | 0.190 | 1.98 | 3.959 | 0 | 4.81 | 12.1 | 126 | 0 | | 50 | S |
| 1,2,4-Trichlorobenzene | 2.67 | 0.990 | 3.959 | 0.01534 | 67.1 | 25 | 110 | 3.004 | 11.6 | 50 | |
| Naphthalene | 3.94 | 0.495 | 3.959 | 0 | 99.6 | 23.5 | 108 | 4.716 | 17.9 | 50 | |
| 4-Chloroaniline | 1.10 | 4.95 | 3.959 | 0 | 27.7 | 5 | 110 | 0 | | 50 | |
| Hexachlorobutadiene | 2.87 | 0.990 | 3.959 | 0 | 72.4 | 23.6 | 98.8 | 3.073 | 6.98 | 50 | |
| 4-Chloro-3-methylphenol | 1.21 | 4.95 | 3.959 | 0 | 30.5 | 5 | 139 | 0 | | 50 | |
| 2-Methylnaphthalene | 3.22 | 0.495 | 3.959 | 0.5083 | 68.6 | 26.1 | 118 | 3.493 | 8.05 | 50 | |
| 1-Methylnaphthalene | 3.39 | 0.495 | 3.959 | 0.3337 | 77.2 | 27.5 | 116 | 3.430 | 1.19 | 50 | |
| Hexachlorocyclopentadiene | ND | 0.990 | 3.959 | 0 | 0 | 5 | 126 | 0 | | 50 | S |
| 2,4,6-Trichlorophenol | 3.77 | 1.98 | 3.959 | 0 | 95.2 | 10.5 | 124 | 3.714 | 1.46 | 50 | |
| 2,4,5-Trichlorophenol | 3.89 | 1.98 | 3.959 | 0 | 98.3 | 5 | 144 | 4.065 | 4.41 | 50 | |
| 2-Chloronaphthalene | 2.97 | 0.990 | 3.959 | 0 | 75.1 | 27 | 117 | 3.292 | 10.2 | 50 | |
| 2-Nitroaniline | 5.02 | 4.95 | 3.959 | 0 | 127 | 5.48 | 142 | 4.940 | 1.52 | 50 | |
| Acenaphthene | 3.61 | 0.495 | 3.959 | 0 | 91.1 | 29.3 | 117 | 3.812 | 5.56 | 50 | |
| Dimethylphthalate | 6.08 | 0.990 | 3.959 | 2.846 | 81.8 | 24 | 132 | 6.146 | 1.04 | 50 | |
| 2,6-Dinitrotoluene | 3.87 | 0.990 | 3.959 | 0 | 97.7 | 22 | 129 | 3.800 | 1.79 | 50 | |
| Acenaphthylene | 2.84 | 0.495 | 3.959 | 0 | 71.6 | 25.1 | 121 | 3.180 | 11.4 | 50 | |
| 2,4-Dinitrophenol | ND | 1.98 | 7.917 | 0 | 0 | 5 | 172 | 0 | | 50 | S |
| Dibenzofuran | 3.38 | 0.990 | 3.959 | 0 | 85.3 | 27.8 | 116 | 3.852 | 13.2 | 50 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID **1612293-003FMSD** SampType: **MSD** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33768**
Client ID: **BATCH** Batch ID: **15825** Analysis Date: **1/5/2017** SeqNo: **641346**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | 3.90 | 0.990 | 3.959 | 0 | 98.5 | 24.4 | 124 | 4.096 | 4.88 | 50 | |
| 4-Nitrophenol | ND | 4.95 | 3.959 | 0 | 0 | 5 | 120 | 0 | | 50 | S |
| Fluorene | 3.10 | 0.495 | 3.959 | 0.1396 | 74.8 | 27.6 | 123 | 3.648 | 16.2 | 50 | |
| 4-Chlorophenyl phenyl ether | 2.96 | 0.990 | 3.959 | 0 | 74.8 | 28.6 | 117 | 3.593 | 19.3 | 50 | |
| Diethylphthalate | 6.57 | 0.990 | 3.959 | 3.324 | 82.0 | 27.4 | 137 | 7.434 | 12.4 | 50 | |
| 4,6-Dinitro-2-methylphenol | 1.08 | 4.95 | 3.959 | 0 | 27.3 | 5 | 134 | 0 | | 50 | |
| 4-Bromophenyl phenyl ether | 3.35 | 0.990 | 3.959 | 0 | 84.6 | 32.2 | 120 | 3.810 | 12.8 | 50 | |
| Hexachlorobenzene | 3.07 | 0.990 | 3.959 | 0 | 77.6 | 28.3 | 114 | 3.535 | 14.0 | 50 | |
| Pentachlorophenol | 4.89 | 1.98 | 3.959 | 0 | 124 | 5 | 153 | 6.118 | 22.3 | 50 | |
| Phenanthrene | 3.66 | 0.495 | 3.959 | 0.2654 | 85.8 | 29.7 | 120 | 3.801 | 3.78 | 50 | |
| Anthracene | 3.33 | 0.495 | 3.959 | 0 | 84.1 | 22.1 | 125 | 3.669 | 9.68 | 50 | |
| Carbazole | 3.47 | 4.95 | 3.959 | 0.1863 | 82.9 | 31 | 133 | 0 | | 50 | |
| Di-n-butyl phthalate | 4.22 | 0.990 | 3.959 | 0.8816 | 84.3 | 34.3 | 138 | 4.866 | 14.3 | 50 | |
| Fluoranthene | 3.51 | 0.495 | 3.959 | 0.3242 | 80.5 | 33.3 | 137 | 3.700 | 5.24 | 50 | |
| Pyrene | 3.36 | 0.495 | 3.959 | 0.1698 | 80.5 | 31.4 | 132 | 3.547 | 5.55 | 50 | |
| Benzyl Butylphthalate | 3.91 | 0.990 | 3.959 | 0 | 98.9 | 37.7 | 159 | 4.278 | 8.87 | 50 | |
| bis(2-Ethylhexyl)adipate | 2.82 | 0.990 | 3.959 | 0 | 71.3 | 5 | 159 | 3.047 | 7.68 | 50 | |
| Benz[a]anthracene | 3.32 | 0.495 | 3.959 | 0.08903 | 81.6 | 26.5 | 136 | 3.515 | 5.73 | 50 | |
| Chrysene | 3.09 | 0.495 | 3.959 | 0.1221 | 74.9 | 22.2 | 126 | 3.294 | 6.56 | 50 | |
| Bis(2-ethylhexyl) phthalate | 6.86 | 0.990 | 3.959 | 4.277 | 65.3 | 5 | 162 | 7.105 | 3.46 | 50 | |
| Di-n-octyl phthalate | 3.47 | 0.990 | 3.959 | 0.3835 | 78.0 | 5 | 175 | 3.858 | 10.6 | 50 | |
| Benzo (b) fluoranthene | 3.36 | 0.495 | 3.959 | 0.08677 | 82.6 | 20 | 139 | 3.859 | 13.9 | 50 | |
| Benzo (k) fluoranthene | 2.84 | 0.495 | 3.959 | 0.09953 | 69.2 | 13 | 134 | 3.171 | 11.0 | 50 | |
| Benzo[a]pyrene | 3.36 | 0.495 | 3.959 | 0.06363 | 83.2 | 5 | 144 | 3.479 | 3.59 | 50 | |
| Indeno (1,2,3-cd) pyrene | 2.21 | 0.495 | 3.959 | 0.03918 | 54.7 | 5 | 144 | 2.702 | 20.2 | 50 | |
| Dibenzo (a,h) anthracene | 2.26 | 0.495 | 3.959 | 0.02940 | 56.2 | 10.3 | 145 | 2.750 | 19.7 | 50 | |
| Benzo (g,h,I) perylene | 1.96 | 0.495 | 3.959 | 0.04867 | 48.2 | 5 | 135 | 2.676 | 31.1 | 50 | |
| Surr: 2,4,6-Tribromophenol | 4.15 | | 3.959 | | 105 | 5 | 127 | | 0 | | |
| Surr: 2-Fluorobiphenyl | 1.24 | | 1.979 | | 62.6 | 24.1 | 139 | | 0 | | |
| Surr: Nitrobenzene-d5 | 1.87 | | 1.979 | | 94.6 | 21.9 | 139 | | 0 | | |
| Surr: Phenol-d6 | 4.19 | | 3.959 | | 106 | 10.3 | 128 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Semi-Volatile Organic Compounds by EPA Method 8270

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **1612293-003FMSD** | SampType: **MSD** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | | RunNo: **33768** | | |
| Client ID: **BATCH** | Batch ID: **15825** | | | | | Analysis Date: **1/5/2017** | | | SeqNo: **641346** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Surr: p-Terphenyl | 1.34 | | 1.979 | | 67.5 | 25.2 | 132 | | 0 | | |

**NOTES:**
N/A - N-nitrosodiphenylamine decomposes to Diphenylamine (mix component) in the injector. Please refer to Spike recoveries for Diphenylamine.
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Gasoline by NWTPH-Gx

| Sample ID | LCS-15802 | SampType: | LCS | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640498 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | 523 | 50.0 | 500.0 | 0 | 105 | 65 | 135 | | | | |
| Surr: Toluene-d8 | 25.4 | | 25.00 | | 101 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 24.6 | | 25.00 | | 98.3 | 65 | 135 | | | | |

| Sample ID | LCSD-15802 | SampType: | LCS | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640499 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | 505 | 50.0 | 500.0 | 0 | 101 | 65 | 135 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 24.5 | | 25.00 | | 97.9 | 65 | 135 | | | | |

| Sample ID | MB-15802 | SampType: | MBLK | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | MBLKW | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640500 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | | | | |
| Surr: Toluene-d8 | 25.6 | | 25.00 | | 102 | 65 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 23.9 | | 25.00 | | 95.5 | 65 | 135 | | | | |

| Sample ID | 1612278-011ADUP | SampType: | DUP | Units: | µg/L | Prep Date: | 1/3/2017 | RunNo: | 33734 |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | TWP16-PMW5B | Batch ID: | 15802 | | | Analysis Date: | 1/4/2017 | SeqNo: | 640491 |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | 0 | | 30 | |
| Surr: Toluene-d8 | 25.1 | | 25.00 | | 100 | 65 | 135 | | 0 | | |
| Surr: 4-Bromofluorobenzene | 24.3 | | 25.00 | | 97.1 | 65 | 135 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Gasoline by NWTPH-Gx

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33734**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640494**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | 50.0 | | | | | | 0 | | 30 | |
| Surr: Toluene-d8 | 25.3 | | 25.00 | | 101 | 65 | 135 | | 0 | | |
| Surr: 4-Bromofluorobenzene | 24.1 | | 25.00 | | 96.5 | 65 | 135 | | 0 | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640458**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | 16.2 | 1.00 | 20.00 | 0 | 80.8 | 43 | 136 | | | | |
| Chloromethane | 19.7 | 1.00 | 20.00 | 0 | 98.7 | 43.9 | 139 | | | | |
| Vinyl chloride | 20.8 | 0.200 | 20.00 | 0 | 104 | 53.6 | 139 | | | | |
| Bromomethane | 23.3 | 1.00 | 20.00 | 0 | 116 | 42.5 | 152 | | | | |
| Trichlorofluoromethane (CFC-11) | 20.7 | 1.00 | 20.00 | 0 | 103 | 43.5 | 149 | | | | |
| Chloroethane | 22.1 | 1.00 | 20.00 | 0 | 111 | 53 | 141 | | | | |
| 1,1-Dichloroethene | 21.6 | 1.00 | 20.00 | 0 | 108 | 65.6 | 136 | | | | |
| Methylene chloride | 22.1 | 1.00 | 20.00 | 0 | 110 | 67.1 | 131 | | | | |
| trans-1,2-Dichloroethene | 21.9 | 1.00 | 20.00 | 0 | 109 | 71.7 | 129 | | | | |
| Methyl tert-butyl ether (MTBE) | 17.6 | 1.00 | 20.00 | 0 | 88.0 | 67.7 | 131 | | | | |
| 1,1-Dichloroethane | 22.2 | 1.00 | 20.00 | 0 | 111 | 67.9 | 134 | | | | |
| 2,2-Dichloropropane | 13.6 | 2.00 | 20.00 | 0 | 67.8 | 33.7 | 152 | | | | |
| cis-1,2-Dichloroethene | 21.8 | 1.00 | 20.00 | 0 | 109 | 70.2 | 139 | | | | |
| Chloroform | 21.5 | 1.00 | 20.00 | 0 | 108 | 66.3 | 131 | | | | |
| 1,1,1-Trichloroethane (TCA) | 20.5 | 1.00 | 20.00 | 0 | 103 | 71 | 131 | | | | |
| 1,1-Dichloropropene | 22.0 | 1.00 | 20.00 | 0 | 110 | 69.9 | 124 | | | | |
| Carbon tetrachloride | 19.8 | 1.00 | 20.00 | 0 | 98.9 | 66.2 | 134 | | | | |
| 1,2-Dichloroethane (EDC) | 21.0 | 1.00 | 20.00 | 0 | 105 | 67 | 126 | | | | |
| Benzene | 22.2 | 1.00 | 20.00 | 0 | 111 | 69.3 | 132 | | | | |
| Trichloroethene (TCE) | 22.0 | 0.500 | 20.00 | 0 | 110 | 65.2 | 136 | | | | |
| 1,2-Dichloropropane | 22.3 | 1.00 | 20.00 | 0 | 112 | 70.5 | 130 | | | | |
| Bromodichloromethane | 19.4 | 1.00 | 20.00 | 0 | 97.0 | 67.2 | 137 | | | | |
| Dibromomethane | 19.6 | 1.00 | 20.00 | 0 | 98.0 | 75.5 | 126 | | | | |
| cis-1,3-Dichloropropene | 18.1 | 1.00 | 20.00 | 0 | 90.5 | 62.6 | 137 | | | | |
| Toluene | 22.3 | 1.00 | 20.00 | 0 | 111 | 61.3 | 145 | | | | |
| trans-1,3-Dichloropropylene | 16.0 | 1.00 | 20.00 | 0 | 80.2 | 56.5 | 163 | | | | |
| 1,1,2-Trichloroethane | 21.4 | 1.00 | 20.00 | 0 | 107 | 71.7 | 131 | | | | |
| 1,3-Dichloropropane | 20.6 | 1.00 | 20.00 | 0 | 103 | 73.5 | 127 | | | | |
| Tetrachloroethene (PCE) | 21.3 | 1.00 | 20.00 | 0 | 107 | 47.5 | 147 | | | | |
| Dibromochloromethane | 17.4 | 1.00 | 20.00 | 0 | 87.2 | 67.2 | 134 | | | | |
| 1,2-Dibromoethane (EDB) | 19.4 | 0.0600 | 20.00 | 0 | 96.9 | 73.6 | 125 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640458**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 73.9 | 126 | | | | |
| 1,1,1,2-Tetrachloroethane | 19.6 | 1.00 | 20.00 | 0 | 97.9 | 76.8 | 124 | | | | |
| Ethylbenzene | 21.9 | 1.00 | 20.00 | 0 | 109 | 72 | 130 | | | | |
| m,p-Xylene | 42.8 | 1.00 | 40.00 | 0 | 107 | 70.3 | 134 | | | | |
| o-Xylene | 21.3 | 1.00 | 20.00 | 0 | 107 | 72.1 | 131 | | | | |
| Styrene | 21.0 | 1.00 | 20.00 | 0 | 105 | 64.3 | 140 | | | | |
| Isopropylbenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 73.9 | 128 | | | | |
| Bromoform | 17.0 | 1.00 | 20.00 | 0 | 85.2 | 55.3 | 141 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.6 | 1.00 | 20.00 | 0 | 93.0 | 62.9 | 132 | | | | |
| n-Propylbenzene | 21.6 | 1.00 | 20.00 | 0 | 108 | 74.5 | 127 | | | | |
| Bromobenzene | 20.1 | 1.00 | 20.00 | 0 | 101 | 71 | 131 | | | | |
| 1,3,5-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 73.1 | 128 | | | | |
| 2-Chlorotoluene | 21.4 | 1.00 | 20.00 | 0 | 107 | 70.8 | 130 | | | | |
| 4-Chlorotoluene | 21.1 | 1.00 | 20.00 | 0 | 106 | 70.1 | 131 | | | | |
| tert-Butylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 68.2 | 131 | | | | |
| 1,2,3-Trichloropropane | 18.5 | 1.00 | 20.00 | 0 | 92.6 | 67.7 | 131 | | | | |
| 1,2,4-Trichlorobenzene | 19.5 | 2.00 | 20.00 | 0 | 97.4 | 51.8 | 152 | | | | |
| sec-Butylbenzene | 21.2 | 1.00 | 20.00 | 0 | 106 | 72 | 129 | | | | |
| 4-Isopropyltoluene | 20.2 | 1.00 | 20.00 | 0 | 101 | 69.2 | 130 | | | | |
| 1,3-Dichlorobenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 71 | 115 | | | | |
| 1,4-Dichlorobenzene | 21.3 | 1.00 | 20.00 | 0 | 106 | 66.8 | 119 | | | | |
| n-Butylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.8 | 127 | | | | |
| 1,2-Dichlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 69.7 | 119 | | | | |
| 1,2-Dibromo-3-chloropropane | 14.3 | 1.00 | 20.00 | 0 | 71.6 | 63.1 | 136 | | | | |
| 1,2,4-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 73.4 | 127 | | | | |
| Hexachloro-1,3-butadiene | 20.2 | 4.00 | 20.00 | 0 | 101 | 58.6 | 138 | | | | |
| Naphthalene | 19.0 | 1.00 | 20.00 | 0 | 95.2 | 41.8 | 165 | | | | |
| 1,2,3-Trichlorobenzene | 19.4 | 4.00 | 20.00 | 0 | 97.0 | 48.7 | 156 | | | | |
| Surr: Dibromofluoromethane | 25.4 | | 25.00 | | 101 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.3 | | 25.00 | | 101 | 64.2 | 128 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

| Sample ID | **LCS-15802** | SampType: **LCS** | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **15802** | | | | Analysis Date: **1/4/2017** | | SeqNo: **640458** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| Sample ID | **LCSD-15802** | SampType: **LCS** | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **15802** | | | | Analysis Date: **1/4/2017** | | SeqNo: **640459** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Dichlorodifluoromethane (CFC-12) | 14.7 | 1.00 | 20.00 | 0 | 73.4 | 43 | 136 | | | | |
| Chloromethane | 19.5 | 1.00 | 20.00 | 0 | 97.7 | 43.9 | 139 | | | | |
| Vinyl chloride | 19.9 | 0.200 | 20.00 | 0 | 99.5 | 53.6 | 139 | | | | |
| Bromomethane | 23.3 | 1.00 | 20.00 | 0 | 116 | 42.5 | 152 | | | | |
| Trichlorofluoromethane (CFC-11) | 20.1 | 1.00 | 20.00 | 0 | 101 | 43.5 | 149 | | | | |
| Chloroethane | 21.9 | 1.00 | 20.00 | 0 | 109 | 53 | 141 | | | | |
| 1,1-Dichloroethene | 21.3 | 1.00 | 20.00 | 0 | 107 | 65.6 | 136 | | | | |
| Methylene chloride | 22.1 | 1.00 | 20.00 | 0 | 111 | 67.1 | 131 | | | | |
| trans-1,2-Dichloroethene | 21.7 | 1.00 | 20.00 | 0 | 108 | 71.7 | 129 | | | | |
| Methyl tert-butyl ether (MTBE) | 17.4 | 1.00 | 20.00 | 0 | 86.9 | 67.7 | 131 | | | | |
| 1,1-Dichloroethane | 22.1 | 1.00 | 20.00 | 0 | 110 | 67.9 | 134 | | | | |
| 2,2-Dichloropropane | 13.3 | 2.00 | 20.00 | 0 | 66.7 | 33.7 | 152 | | | | |
| cis-1,2-Dichloroethene | 21.9 | 1.00 | 20.00 | 0 | 110 | 70.2 | 139 | | | | |
| Chloroform | 21.6 | 1.00 | 20.00 | 0 | 108 | 66.3 | 131 | | | | |
| 1,1,1-Trichloroethane (TCA) | 20.5 | 1.00 | 20.00 | 0 | 102 | 71 | 131 | | | | |
| 1,1-Dichloropropene | 21.9 | 1.00 | 20.00 | 0 | 110 | 69.9 | 124 | | | | |
| Carbon tetrachloride | 19.9 | 1.00 | 20.00 | 0 | 99.5 | 66.2 | 134 | | | | |
| 1,2-Dichloroethane (EDC) | 20.9 | 1.00 | 20.00 | 0 | 104 | 67 | 126 | | | | |
| Benzene | 22.3 | 1.00 | 20.00 | 0 | 112 | 69.3 | 132 | | | | |
| Trichloroethene (TCE) | 21.6 | 0.500 | 20.00 | 0 | 108 | 65.2 | 136 | | | | |
| 1,2-Dichloropropane | 22.4 | 1.00 | 20.00 | 0 | 112 | 70.5 | 130 | | | | |
| Bromodichloromethane | 19.7 | 1.00 | 20.00 | 0 | 98.6 | 67.2 | 137 | | | | |
| Dibromomethane | 19.5 | 1.00 | 20.00 | 0 | 97.3 | 75.5 | 126 | | | | |
| cis-1,3-Dichloropropene | 18.1 | 1.00 | 20.00 | 0 | 90.6 | 62.6 | 137 | | | | |
| Toluene | 22.1 | 1.00 | 20.00 | 0 | 110 | 61.3 | 145 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCSD-15802** SampType: **LCS** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **LCSW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640459**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| trans-1,3-Dichloropropylene | 16.0 | 1.00 | 20.00 | 0 | 80.2 | 56.5 | 163 | | | | |
| 1,1,2-Trichloroethane | 21.1 | 1.00 | 20.00 | 0 | 105 | 71.7 | 131 | | | | |
| 1,3-Dichloropropane | 20.4 | 1.00 | 20.00 | 0 | 102 | 73.5 | 127 | | | | |
| Tetrachloroethene (PCE) | 21.1 | 1.00 | 20.00 | 0 | 106 | 47.5 | 147 | | | | |
| Dibromochloromethane | 17.6 | 1.00 | 20.00 | 0 | 88.2 | 67.2 | 134 | | | | |
| 1,2-Dibromoethane (EDB) | 19.5 | 0.0600 | 20.00 | 0 | 97.3 | 73.6 | 125 | | | | |
| Chlorobenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.9 | 126 | | | | |
| 1,1,1,2-Tetrachloroethane | 19.5 | 1.00 | 20.00 | 0 | 97.7 | 76.8 | 124 | | | | |
| Ethylbenzene | 21.8 | 1.00 | 20.00 | 0 | 109 | 72 | 130 | | | | |
| m,p-Xylene | 42.6 | 1.00 | 40.00 | 0 | 106 | 70.3 | 134 | | | | |
| o-Xylene | 21.4 | 1.00 | 20.00 | 0 | 107 | 72.1 | 131 | | | | |
| Styrene | 21.1 | 1.00 | 20.00 | 0 | 106 | 64.3 | 140 | | | | |
| Isopropylbenzene | 21.3 | 1.00 | 20.00 | 0 | 107 | 73.9 | 128 | | | | |
| Bromoform | 17.3 | 1.00 | 20.00 | 0 | 86.4 | 55.3 | 141 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.7 | 1.00 | 20.00 | 0 | 93.3 | 62.9 | 132 | | | | |
| n-Propylbenzene | 21.5 | 1.00 | 20.00 | 0 | 107 | 74.5 | 127 | | | | |
| Bromobenzene | 20.1 | 1.00 | 20.00 | 0 | 101 | 71 | 131 | | | | |
| 1,3,5-Trimethylbenzene | 21.1 | 1.00 | 20.00 | 0 | 105 | 73.1 | 128 | | | | |
| 2-Chlorotoluene | 21.4 | 1.00 | 20.00 | 0 | 107 | 70.8 | 130 | | | | |
| 4-Chlorotoluene | 21.1 | 1.00 | 20.00 | 0 | 106 | 70.1 | 131 | | | | |
| tert-Butylbenzene | 20.9 | 1.00 | 20.00 | 0 | 104 | 68.2 | 131 | | | | |
| 1,2,3-Trichloropropane | 17.7 | 1.00 | 20.00 | 0 | 88.6 | 67.7 | 131 | | | | |
| 1,2,4-Trichlorobenzene | 19.3 | 2.00 | 20.00 | 0 | 96.6 | 51.8 | 152 | | | | |
| sec-Butylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 72 | 129 | | | | |
| 4-Isopropyltoluene | 20.0 | 1.00 | 20.00 | 0 | 100 | 69.2 | 130 | | | | |
| 1,3-Dichlorobenzene | 21.6 | 1.00 | 20.00 | 0 | 108 | 71 | 115 | | | | |
| 1,4-Dichlorobenzene | 21.1 | 1.00 | 20.00 | 0 | 106 | 66.8 | 119 | | | | |
| n-Butylbenzene | 20.8 | 1.00 | 20.00 | 0 | 104 | 73.8 | 127 | | | | |
| 1,2-Dichlorobenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 69.7 | 119 | | | | |
| 1,2-Dibromo-3-chloropropane | 14.7 | 1.00 | 20.00 | 0 | 73.6 | 63.1 | 136 | | | | |
| 1,2,4-Trimethylbenzene | 21.0 | 1.00 | 20.00 | 0 | 105 | 73.4 | 127 | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

| Sample ID **LCSD-15802** | SampType: **LCS** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **15802** | | | | | Analysis Date: **1/4/2017** | | SeqNo: **640459** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexachloro-1,3-butadiene | 19.6 | 4.00 | 20.00 | 0 | 98.2 | 58.6 | 138 | | | | |
| Naphthalene | 19.1 | 1.00 | 20.00 | 0 | 95.6 | 41.8 | 165 | | | | |
| 1,2,3-Trichlorobenzene | 19.4 | 4.00 | 20.00 | 0 | 97.2 | 48.7 | 156 | | | | |
| Surr: Dibromofluoromethane | 25.6 | | 25.00 | | 103 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.2 | | 25.00 | | 101 | 64.2 | 128 | | | | |

| Sample ID **MB-15802** | SampType: **MBLK** | | | Units: **µg/L** | | Prep Date: **1/3/2017** | | RunNo: **33733** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **15802** | | | | | Analysis Date: **1/4/2017** | | SeqNo: **640460** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | | | | Q |
| Chloromethane | ND | 1.00 | | | | | | | | | |
| Vinyl chloride | ND | 0.200 | | | | | | | | | |
| Bromomethane | ND | 1.00 | | | | | | | | | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | | | | |
| Chloroethane | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Methylene chloride | ND | 1.00 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | | | | Q |
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | | | | |
| Chloroform | ND | 1.00 | | | | | | | | | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.00 | | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | | | | |
| Benzene | ND | 1.00 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-15802** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **MBLKW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640460**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene (TCE) | ND | 0.500 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | | | | |
| Bromodichloromethane | ND | 1.00 | | | | | | | | | |
| Dibromomethane | ND | 1.00 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | | | | |
| Toluene | ND | 1.00 | | | | | | | | | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | | | | Q |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | | | | |
| Dibromochloromethane | ND | 1.00 | | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | | | | |
| Chlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | | | | |
| Ethylbenzene | ND | 1.00 | | | | | | | | | |
| m,p-Xylene | ND | 1.00 | | | | | | | | | |
| o-Xylene | ND | 1.00 | | | | | | | | | |
| Styrene | ND | 1.00 | | | | | | | | | |
| Isopropylbenzene | ND | 1.00 | | | | | | | | | |
| Bromoform | ND | 1.00 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | | | | |
| n-Propylbenzene | ND | 1.00 | | | | | | | | | |
| Bromobenzene | ND | 1.00 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | | | | |
| 2-Chlorotoluene | ND | 1.00 | | | | | | | | | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | | | | |
| tert-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | | | | |
| sec-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | | | | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-15802** SampType: **MBLK** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **MBLKW** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640460**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| n-Butylbenzene | ND | 1.00 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | | | | Q |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | | | | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | | | | |
| Naphthalene | ND | 1.00 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | | | | |
| Surr: Dibromofluoromethane | 24.3 | | 25.00 | | 97.2 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.3 | | 25.00 | | 101 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 23.7 | | 25.00 | | 94.9 | 64.2 | 128 | | | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1612278-011ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **TWP16-PMW5B** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640449**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | 0 | | 30 | Q |
| Chloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Vinyl chloride | ND | 0.200 | | | | | | 0 | | 30 | |
| Bromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methylene chloride | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | 0 | | 30 | Q |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612278-011ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **TWP16-PMW5B** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640449**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Carbon tetrachloride | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | 0 | | 30 | |
| Benzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichloroethene (TCE) | ND | 0.500 | | | | | | 0 | | 30 | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromodichloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Toluene | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromochloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | 0 | | 30 | |
| Chlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Ethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| m,p-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| o-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| Styrene | ND | 1.00 | | | | | | 0 | | 30 | |
| Isopropylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromoform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Propylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612278-011ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **TWP16-PMW5B** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640449**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| tert-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | 0 | | 30 | |
| sec-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | 0 | | 30 | |
| Naphthalene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.8 | | 25.00 | | 103 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 25.7 | | 25.00 | | 103 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.3 | | 25.00 | | 97.4 | 64.2 | 128 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane (CFC-12) | ND | 1.00 | | | | | | 0 | | 30 | Q |
| Chloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Vinyl chloride | ND | 0.200 | | | | | | 0 | | 30 | |
| Bromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichlorofluoromethane (CFC-11) | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methylene chloride | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Methyl tert-butyl ether (MTBE) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 2,2-Dichloropropane | ND | 2.00 | | | | | | 0 | | 30 | Q |
| cis-1,2-Dichloroethene | ND | 1.00 | | | | | | 0 | | 30 | |
| Chloroform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1-Trichloroethane (TCA) | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Carbon tetrachloride | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichloroethane (EDC) | ND | 1.00 | | | | | | 0 | | 30 | |
| Benzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Trichloroethene (TCE) | ND | 0.500 | | | | | | 0 | | 30 | |
| 1,2-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromodichloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromomethane | ND | 1.00 | | | | | | 0 | | 30 | |
| cis-1,3-Dichloropropene | ND | 1.00 | | | | | | 0 | | 30 | |
| Toluene | ND | 1.00 | | | | | | 0 | | 30 | |
| trans-1,3-Dichloropropylene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2-Trichloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| Tetrachloroethene (PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Dibromochloromethane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromoethane (EDB) | ND | 0.0600 | | | | | | 0 | | 30 | |
| Chlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,1,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| Ethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| m,p-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |
| o-Xylene | ND | 1.00 | | | | | | 0 | | 30 | |

**Work Order:** 1612278
**CLIENT:** Floyd | Snider
**Project:** Ave 55 - Taylor Way

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612283-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **1/3/2017** RunNo: **33733**
Client ID: **BATCH** Batch ID: **15802** Analysis Date: **1/4/2017** SeqNo: **640453**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Styrene | ND | 1.00 | | | | | | 0 | | 30 | |
| Isopropylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromoform | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Propylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Bromobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3,5-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 2-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Chlorotoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| tert-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trichlorobenzene | ND | 2.00 | | | | | | 0 | | 30 | |
| sec-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 4-Isopropyltoluene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,3-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,4-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| n-Butylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dichlorobenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,4-Trimethylbenzene | ND | 1.00 | | | | | | 0 | | 30 | |
| Hexachloro-1,3-butadiene | ND | 4.00 | | | | | | 0 | | 30 | |
| Naphthalene | ND | 1.00 | | | | | | 0 | | 30 | |
| 1,2,3-Trichlorobenzene | ND | 4.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.5 | | 25.00 | | 102 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 25.6 | | 25.00 | | 102 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.2 | | 25.00 | | 96.7 | 64.2 | 128 | | 0 | | |

**NOTES:**
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FS** | Work Order Number: | **1612278** |
| Logged by: | **Chelsea Ward** | Date Received: | **12/28/2016 5:24:00 PM** |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Required ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >0°C to 10.0°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☑ | NA ☐ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☑ | No ☐ | NA ☐ |

| | | | |
|---|---|---|---|
| Person Notified: | Erin Murray | Date | 12/28/2016 |
| By Whom: | Chelsea Ward | Via: | ☑ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | Missing bottles and Total/Dissolved Metals | | |
| Client Instructions: | Only run VOCs/Gx on sample -009 and Dissolved Metals | | |

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Cooler 1 | 2.4 |
| Cooler 2 | 1.7 |
| Cooler 3 | 0.5 |
| Sample 1 | 0.7 |
| Sample 2 | 1.9 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FS** | Work Order Number: | **1612278** |
| Logged by: | **Chelsea Ward** | Date Received: | **12/28/2016 5:24:00 PM** |

| Item # | Temp ºC |
|---|---|
| Sample 3 | 2.8 |
| Temp Blank 1 | 0.2 |
| Temp Blank 2 | 1.7 |
| Temp Blank 3 | 1.6 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# Chain of Custody Record and Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16 Laboratory Project No (internal): 1612278

Page: 1 of: 2

Client: Floyd Snider
Address: 601 Union Suite 600
City, State, Zip: Seattle, WA 98101
Telephone: 206.292.2078 Fax:

Project Name: Ave 55 - Taylor Way
Project No:
Location: Tacoma, WA
Report To (PM): Tom Colligan
PM Email: tom.colligan@floydsnider.com
Collected by: L. Wacter & E. Murray

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Diss... | Total (T) | Dissolved (D) | Anions (IC)*** | EDB (8011) | Hex Cr | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 TWP16-PMW1A | 12/28/16 | 1020 | GW | X | X | #### | | X | X | X | | | X | | D | | X | | | | |
| 2 TWP16-PMW1B | | 1030 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 3 TWP16-PMW2B | | 1200 | | X | X | | 4M | X | X | X | | | X | | | | X | | | | |
| 4 TWP16-PMW2X | | 1205 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 5 TWP16-PMW2A | | 1200 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 6 TWP16-PMW3A | | 1320 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 7 TWP16-PMW3B | | 1315 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 8 TWP16-PMW4A | | 1425 | | X | X | | | X | X | X | | | X | | | | X | | | | |
| 9 TWP16-PMW4B | | 1445 | | X | X | | | ~~X~~ | ~~X~~ | ~~X~~ | | | ~~X~~ | | | | ~~X~~ | | | | Only VOC/Gx per E. Murray 12/29 CW |
| 10 TWP16-PMW5A | | 1535 | | X | X | | | | X | X | | | X | | | | X | | | | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B (Ba) Be Ca (Cd) Co (Cr) (Cu) Fe (Hg) K Mg Mn Mo Na (Ni) (Pb) Sb Se Sr Sn Ti Tl U V (Zn)

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x [signature] | 12/28/16 1724 | x [signature] | 12/28/16 17:24 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

# Fremont Analytical

## Chain of Custody Record and Laboratory Services Agreement

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16

Laboratory Project No (internal): 1612278

Page: 2 of: 2

Client: Floyd / Snider
Address: Same As First
City, State, Zip:
Telephone: Fax:

Project Name: Ave 55 - Taylor
Project No: Collected by:
Location:
Report To (PM):
PM Email:

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| | Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Dissolved (D) | Total (T) | Anions (IC)*** | EDB (8011) | Hex Chromium | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TW16-PMW5B | 12/28/16 | 1600 | W | X | X | | X | X | X | X | | X | X | D | | X | | | | |
| 2 | Trip Blank | | | W | X | X | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B (Ba) Be Ca (Cd) Co (Cr) (Cu) Fe (Hg) K Mg Mn Mo Na (Ni) (Pb) Sb Se Sr Sn Ti Tl U V (Zn)

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x [signature] | 12/28/16 1724 | x [signature] | 12/28/16 1724 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

# Fremont Analytical

## Chain of Custody Record and Laboratory Services Agreement

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/28/16 Laboratory Project No (internal): 1612-278

Page: 1 of: 2

Client: Floyd Snider
Address: 601 Union Suite 600
City, State, Zip: Seattle, WA 98101
Telephone: 206.292.2078 Fax:

Project Name: Ave 55 - Taylor Way
Project No:
Location: Tacoma, WA
Report To (PM): Tom Colligan
PM Email: tom.colligan@floydsnider.com
Collected by: L. Wacter & E. Murray

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

| Sample Name | Sample Date | Sample Time | Sample Type (Matrix)* | VOCs (EPA 8260 / 624) | GX/BTEX | BTEX | Gasoline Range Organics (GX) | Hydrocarbon Identification (HCID) | Diesel/Heavy Oil Range Organics (DX) | SVOCs (EPA 8270 / 625) | PAHs (EPA 8270 - SIM / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Diss. | Total (T) | Dissolved (D) | Anions (IC)*** | EDB (8011) | Hexavalent Chromium | Methane | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 TWP16-PMW1A | 12/28/16 | 1020 | GW | X | X | #### | X | X | X | | | X | D | | | X | | | X | X Add Analysis 12/30/16 STANDARD TAT |
| 2 TWP16-PMW1B | | 1030 | | X | X | | X | X | X | | | X | | | | X | | | | |
| 3 TWP16-PMW2B | | 1200 | | X | X | | X | X | X | | | X | | | | X | | | | |
| 4 TWP16-PMW2X | | 1205 | | X | X | | X | X | X | | | X | | | | X | | | | |
| 5 TWP16-PMW2A | | 1200 | | X | X | | X | X | X | | | X | | | | X | | | X | |
| 6 TWP16-PMW3A | | 1320 | | X | X | | X | X | X | | | X | | | | X | | | X | |
| 7 TWP16-PMW3B | | 1315 | | X | X | | X | X | X | | | X | | | | X | | | | |
| 8 TWP16-PMW4A | | 1425 | | X | X | | X | X | X | | | X | | | | X | | | X | |
| 9 TWP16-PMW4B | | 1445 | | X | X | | | X | X | | | X | | | | X | | | X | Only VOC/GX per E. Murray |
| 10 TWP16-PMW5A | | 1535 | | X | X | | | X | X | | | X | | | | X | | | X | |

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

**I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.**

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| x | 12/28/16 1724 | x | 12/28/16 17:24 |
| Relinquished | Date/Time | Received | Date/Time |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

DRAFT

Date of Report: 08/16/17
Date Received: 08/14/17
Project: Ave 55, F&BI 708260
Date Extracted: 08/15/17
Date Analyzed: 08/15/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SP-1<br>708260-01 | <50 | <250 | 105 |
| SP-2<br>708260-02 | <50 | <250 | 103 |
| SP-3<br>708260-03 | <50 | <250 | 119 |
| SP-4<br>708260-04 | <50 | <250 | 104 |
| SP-1B<br>708260-05 | <50 | <250 | 104 |
| SP-2B<br>708260-06 | <50 | <250 | 106 |
| SP-3B<br>708260-07 | <50 | <250 | 104 |
| SP-4B<br>708260-08 | <50 | <250 | 105 |
| Method Blank<br>07-1760 MB | <50 | <250 | 100 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-1 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-01 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-01.101 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.29 |
| Lead | 5.02 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-2 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-02 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-02.102 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.55 |
| Lead | 2.02 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-3 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-03 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-03.103 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.40 |
| Lead | 2.09 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-4 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-04 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-04.104 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | 2.37 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-1B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-05 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-05.105 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.52 |
| Lead | 2.99 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-2B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-06 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-06.106 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.55 |
| Lead | 3.72 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-3B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-07 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-07.107 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.62 |
| Lead | 2.14 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-4B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-08 |
| Date Analyzed: | 08/15/17 | Data File: | 708260-08.108 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.14 |
| Lead | 1.94 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | I7-432 mb2 |
| Date Analyzed: | 08/15/17 | Data File: | I7-432 mb2.100 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | <1 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-1 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-01 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081524.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 108 | 31 | 163 |
| Benzo(a)anthracene-d12 | 110 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-2 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-02 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081525.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 105 | 31 | 163 |
| Benzo(a)anthracene-d12 | 109 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-3 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-03 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081526.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 102 | 31 | 163 |
| Benzo(a)anthracene-d12 | 107 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-4 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-04 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081527.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 108 | 31 | 163 |
| Benzo(a)anthracene-d12 | 111 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-1B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-05 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081528.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 106 | 31 | 163 |
| Benzo(a)anthracene-d12 | 111 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-2B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-06 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081529.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 104 | 31 | 163 |
| Benzo(a)anthracene-d12 | 108 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-3B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-07 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081530.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 101 | 31 | 163 |
| Benzo(a)anthracene-d12 | 110 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-4B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-08 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081531.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 98 | 31 | 163 |
| Benzo(a)anthracene-d12 | 106 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 07-1759 mb 1/5 |
| Date Analyzed: | 08/16/17 | Data File: | 081523.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 106 | 31 | 163 |
| Benzo(a)anthracene-d12 | 112 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-1 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-01 |
| Date Analyzed: | 08/15/17 | Data File: | 081527.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 89 | 113 |
| Toluene-d8 | 99 | 64 | 137 |
| 4-Bromofluorobenzene | 97 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-2 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-02 |
| Date Analyzed: | 08/16/17 | Data File: | 081607A.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 89 | 113 |
| Toluene-d8 | 101 | 64 | 137 |
| 4-Bromofluorobenzene | 97 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-3 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-03 |
| Date Analyzed: | 08/15/17 | Data File: | 081529.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 89 | 113 |
| Toluene-d8 | 104 | 64 | 137 |
| 4-Bromofluorobenzene | 97 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-4 | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-04 |
| Date Analyzed: | 08/15/17 | Data File: | 081530.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 89 | 113 |
| Toluene-d8 | 103 | 64 | 137 |
| 4-Bromofluorobenzene | 98 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-1B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-05 |
| Date Analyzed: | 08/15/17 | Data File: | 081531.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 89 | 113 |
| Toluene-d8 | 102 | 64 | 137 |
| 4-Bromofluorobenzene | 98 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-2B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-06 |
| Date Analyzed: | 08/15/17 | Data File: | 081532.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 89 | 113 |
| Toluene-d8 | 102 | 64 | 137 |
| 4-Bromofluorobenzene | 97 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-3B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-07 |
| Date Analyzed: | 08/15/17 | Data File: | 081533.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 89 | 113 |
| Toluene-d8 | 101 | 64 | 137 |
| 4-Bromofluorobenzene | 98 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-4B | Client: | Floyd-Snider |
| Date Received: | 08/14/17 | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 708260-08 |
| Date Analyzed: | 08/15/17 | Data File: | 081534.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 89 | 113 |
| Toluene-d8 | 103 | 64 | 137 |
| 4-Bromofluorobenzene | 97 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55, F&BI 708260 |
| Date Extracted: | 08/15/17 | Lab ID: | 07-1762 mb |
| Date Analyzed: | 08/15/17 | Data File: | 081526.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 89 | 113 |
| Toluene-d8 | 102 | 64 | 137 |
| 4-Bromofluorobenzene | 99 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

708260

# SAMPLE CHAIN OF CUSTODY

ME 08/14/17 1 AO2/VS3

Report To Tom Colligan
Company Floyd/Snider
Address 601 Union St. Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email Tom.colligan@floydsnider.com

SAMPLERS (*signature*) [signature]
PROJECT NAME: AVC 55
PO #:
REMARKS:
INVOICE TO:

Page # 1 of 1

TURNAROUND TIME
☐ Standard Turnaround
☑ RUSH 2 days
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | cPAHs PAHs 8270D SIM | Metals (As only) | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-1 | 01 AE | 8/14/17 | 1020 | SOIL | 5 | | X | | | X | | X | X | | | | |
| SP-2 | 02 AE | | 1030 | | 5 | | X | | | X | | X | X | | | | |
| SP-3 | 03 AE | | 1040 | | 5 | | X | | | X | | X | X | | | | |
| SP-4 | 04 AE | | 1050 | | 5 | | X | | | X | | X | X | | | | |
| SP-1B | 05 AE | | 1304 | | 5 | | X | | | X | | X | X | | | | |
| SP-2B | 06 AE | | 1308 | | 5 | | X | | | X | | X | X | | | | |
| SP-3B | 07 AE | | 1310 | | 5 | | X | | | X | | X | X | | | | |
| SP-4B | 08 AE | | 1312 | | 5 | | X | | | X | | X | X | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: [signature] | Sam Murray | Floyd/Snider | 8/14/17 | 1145 |
| Received by: [signature] | [signature] | FCR | 8/14/17 | 1145 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

DRAFT

Date of Report: 09/19/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709186
Date Extracted: 09/13/17
Date Analyzed: 09/13/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| SP-21 (9/8-A-13.31)<br>709186-01 | <2 | 89 |
| SP-22 (9/8-C-13.31)<br>709186-02 | <2 | 89 |
| SP-23 (9/8-D-13.31)<br>709186-03 | <2 | 89 |
| SP-24 (9/8-E-13.31)<br>709186-04 | <2 | 90 |
| SP-25 (9/8-F-13.31)<br>709186-05 | <2 | 92 |
| SP-26 (9/8-G-13.31)<br>709186-06 | <2 | 92 |
| SP-27 (9/11-A-13.31)<br>709186-07 | <2 | 89 |
| Method Blank<br>07-1976 MB | <2 | 89 |

Date of Report: 09/19/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709186
Date Extracted: 09/13/17
Date Analyzed: 09/13/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| SP-21 (9/8-A-13.31)<br>709186-01 | <50 | <250 | 88 |
| SP-22 (9/8-C-13.31)<br>709186-02 | <50 | <250 | 94 |
| SP-23 (9/8-D-13.31)<br>709186-03 | <50 | <250 | 94 |
| SP-24 (9/8-E-13.31)<br>709186-04 | <50 | <250 | 93 |
| SP-25 (9/8-F-13.31)<br>709186-05 | <50 | <250 | 92 |
| SP-26 (9/8-G-13.31)<br>709186-06 | <50 | <250 | 93 |
| SP-27 (9/11-A-13.31)<br>709186-07 | <50 | <250 | 92 |
| Method Blank<br>07-2011 MB | <50 | <250 | 94 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-21 (9/8-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-01 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-01.046 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.09 |
| Cadmium | <1 |
| Lead | 1.56 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-22 (9/8-C-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-02 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-02.062 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.05 |
| Cadmium | <1 |
| Lead | 1.71 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-23 (9/8-D-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-03 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-03.063 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.80 |
| Cadmium | <1 |
| Lead | 8.31 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-24 (9/8-E-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-04 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-04.067 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.05 |
| Cadmium | <1 |
| Lead | 1.85 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-25 (9/8-F-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-05 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-05.068 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.52 |
| Cadmium | <1 |
| Lead | 2.06 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-26 (9/8-G-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-06 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-06.069 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.45 |
| Cadmium | <1 |
| Lead | 7.43 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-27 (9/11-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | 709186-07 |
| Date Analyzed: | 09/14/17 | Data File: | 709186-07.070 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | 1.63 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/14/17 | Lab ID: | I7-498 mb |
| Date Analyzed: | 09/14/17 | Data File: | I7-498 mb.044 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | <1 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-21 (9/8-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-01 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091337.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 75 | 31 | 163 |
| Benzo(a)anthracene-d12 | 89 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-22 (9/8-C-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-02 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091338.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 78 | 31 | 163 |
| Benzo(a)anthracene-d12 | 88 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-23 (9/8-D-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-03 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091339.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 75 | 31 | 163 |
| Benzo(a)anthracene-d12 | 89 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-24 (9/8-E-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-04 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091340.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 75 | 31 | 163 |
| Benzo(a)anthracene-d12 | 88 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-25 (9/8-F-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-05 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091341.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 75 | 31 | 163 |
| Benzo(a)anthracene-d12 | 89 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-26 (9/8-G-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-06 1/50 |
| Date Analyzed: | 09/14/17 | Data File: | 091404A.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 104 d | 31 | 163 |
| Benzo(a)anthracene-d12 | 97 d | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | 0.22 |
| Chrysene | 0.27 |
| Benzo(a)pyrene | 0.20 |
| Benzo(b)fluoranthene | 0.25 |
| Benzo(k)fluoranthene | 0.11 |
| Indeno(1,2,3-cd)pyrene | <0.1 |
| Dibenz(a,h)anthracene | <0.1 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-27 (9/11-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/13/17 | Lab ID: | 709186-07 1/5 |
| Date Analyzed: | 09/14/17 | Data File: | 091405.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 79 | 31 | 163 |
| Benzo(a)anthracene-d12 | 98 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/12/17 | Lab ID: | 07-2003 mb2 1/5 |
| Date Analyzed: | 09/13/17 | Data File: | 091322.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 77 | 31 | 163 |
| Benzo(a)anthracene-d12 | 90 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-21 (9/8-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-01 |
| Date Analyzed: | 09/19/17 | Data File: | 091907.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 89 | 113 |
| Toluene-d8 | 101 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-22 (9/8-C-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-02 |
| Date Analyzed: | 09/19/17 | Data File: | 091908.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 89 | 113 |
| Toluene-d8 | 103 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-23 (9/8-D-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-03 |
| Date Analyzed: | 09/19/17 | Data File: | 091909.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 89 | 113 |
| Toluene-d8 | 99 | 64 | 137 |
| 4-Bromofluorobenzene | 99 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-24 (9/8-E-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-04 |
| Date Analyzed: | 09/19/17 | Data File: | 091910.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 89 | 113 |
| Toluene-d8 | 100 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-25 (9/8-F-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-05 |
| Date Analyzed: | 09/19/17 | Data File: | 091911.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 89 | 113 |
| Toluene-d8 | 102 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-26 (9/8-G-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-06 |
| Date Analyzed: | 09/19/17 | Data File: | 091912.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 89 | 113 |
| Toluene-d8 | 100 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-27 (9/11-A-13.31) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 709186-07 |
| Date Analyzed: | 09/19/17 | Data File: | 091913.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 89 | 113 |
| Toluene-d8 | 99 | 64 | 137 |
| 4-Bromofluorobenzene | 101 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709186 |
| Date Extracted: | 09/19/17 | Lab ID: | 07-2066 mb |
| Date Analyzed: | 09/19/17 | Data File: | 091906.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 89 | 113 |
| Toluene-d8 | 101 | 64 | 137 |
| 4-Bromofluorobenzene | 100 | 81 | 119 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

709186

# SAMPLE CHAIN OF CUSTODY

ME 09-12-17 VSI/~~BOA~~ RE2

Report To DREW Z. & TOM. COLLIGAN

Company AVENUE 55

Address 600 UNIVERSITY ST. #2305

City, State, ZIP SEATTLE, WA 98101

Phone 206-707-9696 Email DZABOROWSKI@AVENUES.NET

SAMPLERS (signature)

PROJECT NAME: AVENUE 55

PO #

REMARKS

INVOICE TO: AVE. 55

Page # ___ of 1

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | ~~SIM~~ 8310 PAHs 8270D SIM | ARSENIC / LEAD | CADMIUM | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-21 (9/8-A-B.31) | 01 A-E | 9/8 | 3:11 | SOIL | | | X | X | | X | | X | 1 | X | | | |
| SP-22 (9/8-C-B.31) | 02 | 9/8 | 3:18 | SOIL | | | X | X | | X | | X | X | X | | | |
| SP-23 (9/8-D-B.31) | 03 | 9/8 | 3:22 | SOIL | | | X | X | | X | | X | X | X | | | |
| SP-24 (9/8-E-B.31) | 04 | 9/8 | 3:26 | SOIL | | | X | X | | X | | X | X | X | | | |
| SP-25 (9/8-F-B.31) | 05 | 9/8 | 3:30 | SOIL | | | X | X | | X | | X | X | X | | | |
| SP-26 (9/8-G B.31) | 06 | 9/8 | 3:35 | SOIL | | | X | X | | X | | X | X | X | | | |
| SP-27 (9/11-A-B.31) | 07 | 9/8 | 3:41 | SOIL | | | X | X | | X | | X | X | X | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE 55 | 9/12 | 3:48 |
| Received by: | VINA | FBI | 9/12 | 3:98 PM |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples received at ___ °C

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

DRAFT

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262
Date Extracted: 09/18/17
Date Analyzed: 09/18/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| SP-28-9/14 B.31<br>709262-01 | <2 | 91 |
| Method Blank<br>07-1981 MB | <2 | 85 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262
Date Extracted: 09/18/17
Date Analyzed: 09/18/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SP-28-9/14 B.31<br>709262-01 | <50 | <250 | 123 |
| Method Blank<br>07-2034 MB | <50 | <250 | 116 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 709262-01 |
| Date Analyzed: | 09/20/17 | Data File: | 709262-01.061 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | 1.62 |

# Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | I7-507 mb |
| Date Analyzed: | 09/20/17 | Data File: | I7-507 mb.046 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | <1 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 709262-01 1/5 |
| Date Analyzed: | 09/19/17 | Data File: | 091915.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 101 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 07-2042 mb 1/5 |
| Date Analyzed: | 09/19/17 | Data File: | 091903.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 84 | 31 | 163 |
| Benzo(a)anthracene-d12 | 99 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/18/17 | Lab ID: | 709262-01 |
| Date Analyzed: | 09/19/17 | Data File: | 091854.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 99 | 55 | 145 |
| 4-Bromofluorobenzene | 99 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

# Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/18/17 | Lab ID: | 07-2021 mb |
| Date Analyzed: | 09/18/17 | Data File: | 091812.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 57 | 121 |
| Toluene-d8 | 102 | 63 | 127 |
| 4-Bromofluorobenzene | 102 | 60 | 133 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

709262

# SAMPLE CHAIN OF CUSTODY

ME 09/15/17 VSI / BTL

Page # _____ of _____

Report To DREW Z. & TOM COLLEAN
Company AVENUE 55
Address 600 UNIVERSITY ST. # 2305
City, State, ZIP SEATTLE, WA 98101
Phone 206-707-9696 Email DZABOROWSKI@AVENUE55.NET

SAMPLERS (*signature*)

PROJECT NAME: AVENUE 55

PO #

REMARKS

INVOICE TO: AVE. 55

TURNAROUND TIME
☐ Standard Turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D ~~SIM~~ | PAHs 8270D SIM | ARSENIC/LEAD | CADMIUM | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-28 - 9/14 B.3' | 01A-E | 9/14 | 1:24 | SOIL | | X | X | | X | | X | X | X | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | Samples received at 4 °C |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE. 55 | 9/14 | 1:24 |
| Received by: | Nhan Phan | FEBI | 9/15/17 | 15:30 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 27, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 18, 2017 from the Ave. 55, F&BI 709291 project. There are 8 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: Drew Zaborowski
FDS0927R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 18, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Ave. 55, F&BI 709291 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 709291 -01 | SP-29 No.1 333D |
| 709291 -02 | SP-30 No.2 333D |
| 709291 -03 | SP-31 No.3 333D |

Samples were sent to NVL Laboratories, Inc. for lead analysis. Review of the enclosed report indicates that all quality assurance was acceptable.

All quality control requirements were acceptable.

Date of Report: 09/27/17
Date Received: 09/18/17
Project: Ave. 55, F&BI 709291
Date Extracted: 09/19/17
Date Analyzed: 09/19/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 56-165) |
|---|---|---|---|---|
| SP-29 No.1 333D<br>709291-01 | ND | ND | ND | 118 |
| SP-30 No.2 333D<br>709291-02 | ND | ND | ND | 103 |
| SP-31 No.3 333D<br>709291-03 | ND | ND | ND | 104 |
| Method Blank<br>07-2036 MB2 | ND | ND | ND | 107 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-29 No.1 333D | Client: | Floyd-Snider |
| Date Received: | 09/18/17 | Project: | Ave. 55, F&BI 709291 |
| Date Extracted: | 09/19/17 | Lab ID: | 709291-01 1/5 |
| Date Analyzed: | 09/20/17 | Data File: | 092009.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 90 | 31 | 163 |
| Benzo(a)anthracene-d12 | 102 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-30 No.2 333D | Client: | Floyd-Snider |
| Date Received: | 09/18/17 | Project: | Ave. 55, F&BI 709291 |
| Date Extracted: | 09/19/17 | Lab ID: | 709291-02 1/5 |
| Date Analyzed: | 09/20/17 | Data File: | 092011.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 90 | 31 | 163 |
| Benzo(a)anthracene-d12 | 103 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-31 No.3 333D | Client: | Floyd-Snider |
| Date Received: | 09/18/17 | Project: | Ave. 55, F&BI 709291 |
| Date Extracted: | 09/19/17 | Lab ID: | 709291-03 1/5 |
| Date Analyzed: | 09/20/17 | Data File: | 092012.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 102 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave. 55, F&BI 709291 |
| Date Extracted: | 09/19/17 | Lab ID: | 07-2042 mb 1/5 |
| Date Analyzed: | 09/19/17 | Data File: | 091903.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 84 | 31 | 163 |
| Benzo(a)anthracene-d12 | 99 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

Date of Report: 09/27/17
Date Received: 09/18/17
Project: Ave. 55, F&BI 709291

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 709262-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | <0.01 | 90 | 44-129 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | <0.01 | 91 | 52-121 |
| Acenaphthene | mg/kg (ppm) | 0.17 | <0.01 | 92 | 51-123 |
| Fluorene | mg/kg (ppm) | 0.17 | <0.01 | 94 | 37-137 |
| Phenanthrene | mg/kg (ppm) | 0.17 | <0.01 | 92 | 34-141 |
| Anthracene | mg/kg (ppm) | 0.17 | <0.01 | 88 | 32-124 |
| Fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 106 | 16-160 |
| Pyrene | mg/kg (ppm) | 0.17 | <0.01 | 77 | 10-180 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 96 | 23-144 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 94 | 32-149 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 93 | 23-176 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 99 | 42-139 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 21-163 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 23-170 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 31-146 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | <0.01 | 81 | 37-133 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | 92 | 91 | 58-121 | 1 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | 90 | 90 | 54-121 | 0 |
| Acenaphthene | mg/kg (ppm) | 0.17 | 92 | 92 | 54-123 | 0 |
| Fluorene | mg/kg (ppm) | 0.17 | 93 | 93 | 56-127 | 0 |
| Phenanthrene | mg/kg (ppm) | 0.17 | 92 | 92 | 55-122 | 0 |
| Anthracene | mg/kg (ppm) | 0.17 | 86 | 88 | 50-120 | 2 |
| Fluoranthene | mg/kg (ppm) | 0.17 | 97 | 100 | 54-129 | 3 |
| Pyrene | mg/kg (ppm) | 0.17 | 81 | 80 | 53-127 | 1 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 93 | 93 | 51-115 | 0 |
| Chrysene | mg/kg (ppm) | 0.17 | 93 | 94 | 55-129 | 1 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 90 | 92 | 56-123 | 2 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 99 | 99 | 54-131 | 0 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 82 | 83 | 51-118 | 1 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 86 | 80 | 49-148 | 7 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 90 | 86 | 50-141 | 5 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | 88 | 81 | 52-131 | 8 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

September 26, 2017

Michael Erdahl
**FRIEDMAN & BRUYA, INC.**
3012 16th Ave. West
Seattle, WA 98119

NVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

**RE: Metals Analysis; NVL Batch # 1717029.00**

Dear Mr. Erdahl,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Preparation of these samples was conducted following protocol outlined in EPA Method SW 846 -3051 unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm) , Percent (%) or $mg/cm^2$ by area. Dust wipe sample results are usually expressed in ug/wipe and $ug/ft^2$. TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and $ug/m^3$. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested and are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. if you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Shalini Patel, Laboratory Analyst

ilac-MRA
AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 101861

**NVL Laboratories, Inc.**
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

# Analysis Report

## Total Lead (Pb)

Client: FRIEDMAN & BRUYA, INC.
Address: 3012 16th Ave. West
Seattle, WA 98119

**Attention: Mr. Michael Erdahl**
Project Location: N-A

**Batch #: 1717029.00**
Matrix: Soil
Method: EPA 3051/7000B
Client Project #: 709291
Date Received: 9/25/2017
Samples Received: 3
Samples Analyzed: 3

| Lab ID | Client Sample # | Sample Wt (g) | RL mg/ kg | Results in mg/Kg | Results in ppm |
|---|---|---|---|---|---|
| **17093122** | SP29 #1 3330 | 0.3549 | 28.0 | < 28.0 | < 28.0 |
| **17093123** | SP30 #2 3330 | 0.2800 | 36.0 | < 36.0 | < 36.0 |
| **17093124** | SP31 #3 3330 | 0.2832 | 35.0 | < 35.0 | < 35.0 |

Sampled by: Client
Analyzed by: Yasuyuki Hida Date Analyzed: 09/25/2017
Reviewed by: Shalini Patel Date Issued: 09/26/2017

Shalini Patel, Laboratory Analyst

mg/ kg = Milligrams per kilogram
ppm = Parts per million
RL = Reporting Limit
'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2017-0925-10

NVL Laboratories, Inc.
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

# LEAD LABORATORY SERVICES

**Company** FRIEDMAN & BRUYA, INC.
**Address** 3012 16th Ave. West
Seattle, WA 98119
**Project Manager** Mr. Michael Erdahl
**Phone** (206) 285-8282

**NVL Batch Number** **1717029.00**
**TAT** 4 Hrs **AH** No
**Rush TAT**
**Due Date** 9/26/2017 **Time** 9:45 AM
**Email** merdahl@friedmanandbruya.com
**Fax** (206) 283-5044

**Project Name/Number:** 709291 **Project Location:** N-A

**Subcategory** Flame AA (FAA)
**Item Code** FAA-03 EPA 7000B Lead by FAA <soil>
**Metals** Lead (Pb)

**Total Number of Samples** 3 Rush Samples

| | Lab ID | Sample ID | Description | A/R |
|---|---|---|---|---|
| 1 | 17093122 | SP29 #1 3330 | | A |
| 2 | 17093123 | SP30 #2 3330 | | A |
| 3 | 17093124 | SP31 #3 3330 | | A |

| | Print Name | Signature | Company | Date | Time |
|---|---|---|---|---|---|
| **Sampled by** | Client | | | | |
| **Relinquished by** | Federal Express | | | | |

| Office Use Only | Print Name | Signature | Company | Date | Time |
|---|---|---|---|---|---|
| **Received by** | Soumeya Benzina | | NVL | 9/25/17 | 1345 |
| **Analyzed by** | Yasuyuki Hida | | NVL | 9/25/17 | |
| **Results Called by** | | | | | |
| ☐ **Faxed** ☐ **Emailed** | | | | | |

**Special Instructions:**

Date: 9/25/2017
Time: 3:49 PM
Entered By: Soumeya Benzina

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

**1717029**


Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044


SUBCONTRACTER: NVL

PROJECT NAME/NO.: 709291

PO #: F-97

REMARKS: Please Email Results

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☒ RUSH thr 9/26 e Noon.

Rush charges authorized by:

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

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Nitrate | Sulfate | Alkalinity | TOC-9060M | Lead | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP29 *1 3330 | | 9/14/17 | 3:00 | So.I | 1 | | | | | | | | X | | | |
| SP30 *2 3330 | | ↓ | 3:07 | ↓ | 1 | | | | | | | | X | | | |
| SP31 *3 3330 | | ↓ | 3:14 | ↓ | 1 | | | | | | | | X | | | |
| | | | | | | | | | | | | | | | | |
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*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: | | Michael Erdahl | Friedman and Bruya | 9/23/17 | 1345 |
| Received by: | Mohammad J. | | NVL | 9/25/17 | 13:45 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Received by: Yasuyuki Hida 9/26/17 17:10

709291

# SAMPLE CHAIN OF CUSTODY

ME 09-18-17 VSI/BT

Page # _____ of _____

Report To DREW Z. & TOM C.

Company AVE. 55

Address 600 UNIV. ST. #2305

City, State, ZIP SEATTLE, WA 98101

Phone 206-707-9696 Email DZABOROWSKI @AVENUE66.NET

SAMPLERS (signature)

PROJECT NAME: AVE. 55

PO #:

REMARKS:

INVOICE TO: AVE. 55

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | PAHs 8270D SIM | LEAD | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-29-#1 333D | 01 A-E | 9-14 | 3:00 | SOIL | 5 | X | | | | | | X | X | | | | |
| SP-30-#2 333D | 02 | 9-14 | 3:07 | SOIL | 5 | X | | | | | | X | X | | | | |
| SP-31-#3 333D | 03 | 9-14 | 3:14 | SOIL | 5 | X | | | | | | X | X | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |

Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE. 55 | 9-14 | 3:00 |
| Received by: | Jon Shuman | FBT | 9/15/17 | 16:50 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 27, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 21, 2017 from the Ave. 55, F&BI 709367 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: Drew Zaborowski
FDS0927R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 21, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Ave. 55, F&BI 709367 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 709367 -01 | SP-32 |
| 709367 -02 | SP-33 |
| 709367 -03 | SP-34 |
| 709367 -04 | SP-35 |
| 709367 -05 | SP-36 |
| 709367 -06 | SP-37 |
| 709367 -07 | SP-38 |
| 709367 -08 | SP-39 |
| 709367 -09 | SP-40 |
| 709367 -10 | SP-41 |
| 709367 -11 | SP-42 |
| 709367 -12 | SP-43 |
| 709367 -13 | SP-44 |
| 709367 -14 | SP-45 |
| 709367 -15 | SP-46 |

Samples were sent to NVL Laboratories, Inc. for lead analysis. Review of the enclosed report indicates that all quality assurance was acceptable.

All quality control requirements were acceptable.

Date of Report: 09/27/17
Date Received: 09/21/17
Project: Ave. 55, F&BI 709367
Date Extracted: 09/22/17
Date Analyzed: 09/22/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 53-144) |
|---|---|---|---|---|
| SP-32<br>709367-01 | ND | ND | ND | 85 |
| SP-33<br>709367-02 | ND | ND | ND | 73 |
| SP-34<br>709367-03 | ND | ND | ND | 75 |
| SP-35<br>709367-04 | ND | ND | ND | 77 |
| SP-36<br>709367-05 | ND | ND | ND | 82 |
| SP-37<br>709367-06 | ND | ND | ND | 88 |
| SP-38<br>709367-07 | ND | ND | ND | 74 |
| SP-39<br>709367-08 | ND | ND | ND | 85 |
| SP-40<br>709367-09 | ND | ND | ND | 80 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

Date of Report: 09/27/17
Date Received: 09/21/17
Project: Ave. 55, F&BI 709367
Date Extracted: 09/22/17
Date Analyzed: 09/22/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 53-144) |
|---|---|---|---|---|
| SP-41<br>709367-10 | ND | ND | ND | 71 |
| SP-42<br>709367-11 | ND | ND | ND | 84 |
| SP-43<br>709367-12 | ND | ND | ND | 81 |
| SP-44<br>709367-13 | ND | ND | ND | 76 |
| SP-45<br>709367-14 | ND | ND | ND | 75 |
| SP-46<br>709367-15 | ND | ND | ND | 87 |
| Method Blank<br>07-2103 MB | ND | ND | ND | 88 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-32 | Client: | Floyd-Snider |
| Date Received: | 09/21/17 | Project: | Ave. 55, F&BI 709367 |
| Date Extracted: | 09/22/17 | Lab ID: | 709367-01 1/5 |
| Date Analyzed: | 09/25/17 | Data File: | 092505.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 91 | 31 | 163 |
| Benzo(a)anthracene-d12 | 103 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave. 55, F&BI 709367 |
| Date Extracted: | 09/22/17 | Lab ID: | 07-2085 mb2 1/5 |
| Date Analyzed: | 09/25/17 | Data File: | 092504.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 91 | 31 | 163 |
| Benzo(a)anthracene-d12 | 101 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

Date of Report: 09/27/17
Date Received: 09/21/17
Project: Ave. 55, F&BI 709367

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 709338-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | <0.01 | 81 | 44-129 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | <0.01 | 83 | 52-121 |
| Acenaphthene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 51-123 |
| Fluorene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 37-137 |
| Phenanthrene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 34-141 |
| Anthracene | mg/kg (ppm) | 0.17 | <0.01 | 79 | 32-124 |
| Fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 16-160 |
| Pyrene | mg/kg (ppm) | 0.17 | <0.01 | 79 | 10-180 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 90 | 23-144 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 32-149 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 23-176 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 85 | 42-139 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 77 | 21-163 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 80 | 23-170 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 77 | 31-146 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | <0.01 | 76 | 37-133 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | 88 | 91 | 58-121 | 3 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | 91 | 92 | 54-121 | 1 |
| Acenaphthene | mg/kg (ppm) | 0.17 | 89 | 90 | 54-123 | 1 |
| Fluorene | mg/kg (ppm) | 0.17 | 92 | 92 | 56-127 | 0 |
| Phenanthrene | mg/kg (ppm) | 0.17 | 89 | 91 | 55-122 | 2 |
| Anthracene | mg/kg (ppm) | 0.17 | 84 | 87 | 50-120 | 4 |
| Fluoranthene | mg/kg (ppm) | 0.17 | 97 | 93 | 54-129 | 4 |
| Pyrene | mg/kg (ppm) | 0.17 | 87 | 93 | 53-127 | 7 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 96 | 95 | 51-115 | 1 |
| Chrysene | mg/kg (ppm) | 0.17 | 93 | 93 | 55-129 | 0 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 97 | 96 | 56-123 | 1 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 99 | 96 | 54-131 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 87 | 87 | 51-118 | 0 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 73 | 90 | 49-148 | 21 vo |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 73 | 89 | 50-141 | 20 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | 69 | 84 | 52-131 | 20 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

September 26, 2017

Michael Erdahl
**FRIEDMAN & BRUYA, INC.**
3012 16th Ave. West
Seattle, WA 98119

NVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

**RE: Metals Analysis; NVL Batch # 1717028.00**

Dear Mr. Erdahl,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Preparation of these samples was conducted following protocol outlined in EPA Method SW 846 -3051 unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm) , Percent (%) or $mg/cm^2$ by area. Dust wipe sample results are usually expressed in ug/wipe and $ug/ft^2$. TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and $ug/m^3$. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested and are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. if you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Shalini Patel, Laboratory Analyst

ilac-MRA
AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 101861

**NVL Laboratories, Inc.**
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

# Analysis Report

## Total Lead (Pb)

Client: FRIEDMAN & BRUYA, INC.
Address: 3012 16th Ave. West
Seattle, WA 98119

**Attention: Mr. Michael Erdahl**
Project Location: N-A

**Batch #: 1717028.00**
Matrix: Soil
Method: EPA 3051/7000B
Client Project #: 709367
Date Received: 9/25/2017
Samples Received: 15
Samples Analyzed: 15

| Lab ID | Client Sample # | Sample Wt (g) | RL mg/ kg | Results in mg/Kg | Results in ppm |
|---|---|---|---|---|---|
| **17093107** | SP-32 | 0.3048 | 33.0 | < 33.0 | < 33.0 |
| **17093108** | SP-33 | 0.3164 | 32.0 | < 32.0 | < 32.0 |
| **17093109** | SP-34 | 0.3235 | 31.0 | < 31.0 | < 31.0 |
| **17093110** | SP-35 | 0.2956 | 34.0 | < 34.0 | < 34.0 |
| **17093111** | SP-36 | 0.3135 | 32.0 | < 32.0 | < 32.0 |
| **17093112** | SP-37 | 0.3556 | 28.0 | < 28.0 | < 28.0 |
| **17093113** | SP-38 | 0.3425 | 29.0 | < 29.0 | < 29.0 |
| **17093114** | SP-39 | 0.3208 | 31.0 | < 31.0 | < 31.0 |
| **17093115** | SP-40 | 0.3209 | 31.0 | < 31.0 | < 31.0 |
| **17093116** | SP-41 | 0.3192 | 31.0 | < 31.0 | < 31.0 |
| **17093117** | SP-42 | 0.2989 | 33.0 | < 33.0 | < 33.0 |
| **17093118** | SP-43 | 0.3036 | 33.0 | < 33.0 | < 33.0 |
| **17093119** | SP-44 | 0.3168 | 32.0 | < 32.0 | < 32.0 |
| **17093120** | SP-45 | 0.3580 | 28.0 | < 28.0 | < 28.0 |
| **17093121** | SP-46 | 0.3716 | 27.0 | < 27.0 | < 27.0 |

Sampled by: Client
Analyzed by: Yasuyuki Hida Date Analyzed: 09/25/2017
Reviewed by: Shalini Patel Date Issued: 09/26/2017

Shalini Patel, Laboratory Analyst

mg/ kg = Milligrams per kilogram
ppm = Parts per million
RL = Reporting Limit
'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

**NVL Laboratories, Inc.**
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

# LEAD LABORATORY SERVICES

**Company** FRIEDMAN & BRUYA, INC.
**Address** 3012 16th Ave. West
Seattle, WA 98119
**Project Manager** Mr. Michael Erdahl
**Phone** (206) 285-8282

**NVL Batch Number** **1717028.00**
**TAT** 4 Hrs **AH** No
**Rush TAT**
**Due Date** 9/26/2017 **Time** 9:45 AM
**Email** merdahl@friedmanandbruya.com
**Fax** (206) 283-5044

**Project Name/Number:** 709367 **Project Location:** N-A

**Subcategory** Flame AA (FAA)
**Item Code** FAA-03 EPA 7000B Lead by FAA <soil>

**Total Number of Samples** 15 Rush Samples

| | Lab ID | Sample ID | Description | A/R |
|---|---|---|---|---|
| 1 | 17093107 | SP-32 | | A |
| 2 | 17093108 | SP-33 | | A |
| 3 | 17093109 | SP-34 | | A |
| 4 | 17093110 | SP-35 | | A |
| 5 | 17093111 | SP-36 | | A |
| 6 | 17093112 | SP-37 | | A |
| 7 | 17093113 | SP-38 | | A |
| 8 | 17093114 | SP-39 | | A |
| 9 | 17093115 | SP-40 | | A |
| 10 | 17093116 | SP-41 | | A |
| 11 | 17093117 | SP-42 | | A |
| 12 | 17093118 | SP-43 | | A |
| 13 | 17093119 | SP-44 | | A |
| 14 | 17093120 | SP-45 | | A |
| 15 | 17093121 | SP-46 | | A |

| | Print Name | Signature | Company | Date | Time |
|---|---|---|---|---|---|
| **Sampled by** | Client | | | | |
| **Relinquished by** | Federal Express | | | | |

| Office Use Only | Print Name | Signature | Company | Date | Time |
|---|---|---|---|---|---|
| **Received by** | Mohammed Jamal | | NVL | 9/25/17 | 1545 |
| **Analyzed by** | Yasuyuki Hida | | NVL | 9/25/17 | |
| **Results Called by** | | | | | |
| ☐ **Faxed** ☐ **Emailed** | | | | | |

**Special Instructions:**

Date: 9/25/2017
Time: 3:45 PM
Entered By: Mohammed Jamal

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1717028

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER NVL
PROJECT NAME/NO. 709367
PO # F-97
REMARKS Please Email Results

Page # 1 of 4
TURNAROUND TIME
☐ Standard (2 Weeks)
☒ RUSH 4hr 9/26 @ Noon Due
Rush charges authorized by:

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

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Nitrate | Sulfate | Alkalinity | TOC-9060M | Lead | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-32 | | 9/18/17 | | Soil | 1 | | | | | | | | X | | | |
| SP-33 | | | | | | | | | | | | | X | | | |
| SP-34 | | | | | | | | | | | | | X | | | |
| SP-35 | | | | | | | | | | | | | X | | | |
| SP-36 | | | | | | | | | | | | | X | | | |
| SP-37 | | | | | | | | | | | | | X | | | |
| SP-38 | | | | | | | | | | | | | X | | | |
| SP-39 | | | | | | | | | | | | | X | | | |
| SP-40 | | | | | | | | | | | | | X | | | |
| SP-41 | | | | | | | | | | | | | X | | | |
| SP-42 | | | | | | | | | | | | | X | | | |
| SP-43 | | | | | | | | | | | | | X | | | |
| SP-44 | | | | | | | | | | | | | X | | | |

*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: | | Michael Erdahl | Friedman and Bruya | 9/27/17 | 1346 |
| Received by: | | ~~NVL~~ | NVL | 9/25/17 | 15:45 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1717028

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER NVL

PROJECT NAME/NO. 709367

PO # F-97

REMARKS

Please Email Results



TURNAROUND TIME

☐ Standard (2 Weeks)

☒ RUSH 4 hr. 9/26 e noon

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Nitrate | Sulfate | Alkalinity | TOC-9060M | Lead | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-45 | | 9/18/17 | | Soil | 1 | | | | | | | | X | | | |
| SP-46 | | " | | " | 1 | | | | | | | | X | | | |
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*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: | | Michael Erdahl | Friedman and Bruya | 9/27/17 | 1346 |
| Received by: | Mohammad | | NVL | 9/25/17 | 13:45 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

709867

# SAMPLE CHAIN OF CUSTODY ME 09/21/17

US1/BT2

Report To DREW Z. & TOM C.
Company AVE.55
Address 600 UNIV. ST. #2305
City, State, ZIP SEA. WA 98101
Phone 206-707-9696 Email

SAMPLERS (signature)

PROJECT NAME: AVE.55
PO #:

REMARKS:

INVOICE TO: AVE.55

Page # ____ of ____

TURNAROUND TIME
- ☐ Standard Turnaround
- ☑ RUSH 48 HR 3 day okpeJC
- Rush charges authorized by: 9/25/17

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | PAHs 8270D SIM | LEAD | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| SP-32 | 01 AE #4-333D | 9/18 | 3:37 | SOIL | | X | | | | | | X | X | | | | |
| SP-33 | 02 #5-333D | 9/18 | 3:41 | SOIL | | X | | | | | | | X | | | | |
| SP-34 | 03 #6-333D | 9/18 | 3:44 | SOIL | | X | | | | | | | X | | | | |
| SP-35 | 04 #7-333D | 9/18 | 3:48 | SOIL | | X | | | | | | | X | | | | |
| SP-36 | 05 #8-333D | 9/18 | 3:52 | SOIL | | X | | | | | | | X | | | | |
| SP-37 | 06 #9-333D | 9/18 | 3:56 | SOIL | | X | | | | | | | X | | | | |
| SP-38 | 07 #10-333D | 9/18 | 3:58 | SOIL | | X | | | | | | | X | | | | |
| SP-39 | 08 #11-333D | 9/18 | 3:59 | SOIL | | X | | | | | | | X | | | | |
| SP-40 | 09 #12-333D | 9/18 | 4:03 | SOIL | | X | | | | | | | X | | | | |
| | | | | | | | | | | | | | | | | | Samples received at 2 °C |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABONOWSKI | AVE.55 | 9/19/17 | 3:37 |
| Received by: | TOM LADD | FSC | 0421 | 4:58 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

709367

# SAMPLE CHAIN OF CUSTODY

ME 09/21/17 VSI/BE2

Report To DREW Z & TOM C

Company AVE. 55

Address 600 UNIV. ST. #2305

City, State, ZIP SEATTLE

Phone 206-701-9696 Email

SAMPLERS (*signature*)

PROJECT NAME: AVE 55

PO #

REMARKS

INVOICE TO: AVE 55

Page # ____ of ____

**TURNAROUND TIME**
- ☐ Standard Turnaround
- ☒ RUSH 48 HR
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

| Sample ID | | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | PAHs 8270D SIM | LEAD | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| SP-41 | 10 | #1-333D | 9/19 | 4:09 | SOIL | | X | | | | | | | X | | | | |
| SP-42 | 11 | #2-333D | 9/19 | 4:11 | SOIL | | X | | | | | | | X | | | | |
| SP-43 | 12 | #3-333D | 9/19 | 4:14 | SOIL | | X | | | | | | | X | | | | |
| SP-44 | 13 | #4-333D | 9/19 | 4:15 | SOIL | | X | | | | | | | X | | | | |
| SP-45 | 14 | #5-333D | 9/19 | 4:17 | SOIL | | X | | | | | | | X | | | | |
| SP-46 | 15 | #6-333D | 9/19 | 4:19 | SOIL | | X | | | | | | | X | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | Samples received at 2 °C |
| | | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE.55 | 9/19/17 | 4:09 |
| Received by: | TOM LADD | FBI | 09-21-17 | 4:58 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 1, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on October 26, 2017 from the Ave 55, F&BI 710426 project. There are 23 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: Drew Zabrowski
FDS1101R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 26, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55, F&BI 710426 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 710426 -01 | SP-47 |
| 710426 -02 | SP-48 |
| 710426 -03 | SP-49 |
| 710426 -04 | SP-50 |
| 710426 -05 | SP-51 |
| 710426 -06 | SP-52 |

A 6020A internal standard failed the acceptance criteria for sample SP-50 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

Date of Report: 11/01/17
Date Received: 10/26/17
Project: Ave 55, F&BI 710426
Date Extracted: 10/27/17
Date Analyzed: 10/27/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 48-168) |
|---|---|---|---|---|
| SP-47<br>710426-01 | ND | ND | D | 120 |
| SP-48<br>710426-02 | ND | ND | ND | 104 |
| SP-49<br>710426-03 | ND | ND | ND | 111 |
| SP-50<br>710426-04 | ND | ND | ND | 119 |
| SP-51<br>710426-05 | ND | ND | ND | 120 |
| SP-52<br>710426-06 | ND | ND | ND | 115 |
| Method Blank<br>07-2410 MB | ND | ND | ND | 119 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

Date of Report: 11/01/17
Date Received: 10/26/17
Project: Ave 55, F&BI 710426
Date Extracted: 10/30/17
Date Analyzed: 10/30/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| SP-47<br>710426-01 | 110 x | 760 | 99 |
| Method Blank<br>07-2417 MB | <50 | <250 | 123 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-47 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-01 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-01.047 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.76 |
| Cadmium | <1 |
| Chromium | 20.0 |
| Lead | 29.0 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-48 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-02 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-02.052 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.13 |
| Cadmium | <1 |
| Chromium | 18.0 |
| Lead | 2.12 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-49 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-03 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-03.048 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.23 |
| Cadmium | <1 |
| Chromium | 29.6 J |
| Lead | 3.00 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-49 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-03 x5 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-03 x5.061 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 33.8 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-50 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-04 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-04.049 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.63 |
| Cadmium | <1 |
| Chromium | 25.9 J |
| Lead | 19.2 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-50 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-04 x5 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-04 x5.062 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 29.5 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-51 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-05 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-05.050 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.67 |
| Cadmium | <1 |
| Chromium | 24.8 |
| Lead | 7.81 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-52 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-06 |
| Date Analyzed: | 10/27/17 | Data File: | 710426-06.051 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.78 |
| Cadmium | <1 |
| Chromium | 36.7 |
| Lead | 5.26 |
| Mercury | <1 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | I7-602 mb |
| Date Analyzed: | 10/27/17 | Data File: | I7-602 mb.058 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Lead | <1 |
| Mercury | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-47 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-01 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102709.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 92 | 31 | 163 |
| Benzo(a)anthracene-d12 | 110 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | 0.042 |
| Chrysene | 0.063 |
| Benzo(a)pyrene | 0.058 |
| Benzo(b)fluoranthene | 0.073 |
| Benzo(k)fluoranthene | 0.021 |
| Indeno(1,2,3-cd)pyrene | 0.035 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-48 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-02 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102710.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 86 | 31 | 163 |
| Benzo(a)anthracene-d12 | 103 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-49 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-03 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102711.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 101 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-50 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-04 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102712.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 85 | 31 | 163 |
| Benzo(a)anthracene-d12 | 106 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | 0.013 |
| Benzo(a)pyrene | 0.011 |
| Benzo(b)fluoranthene | 0.014 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-51 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-05 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102713.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 106 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-52 | Client: | Floyd-Snider |
| Date Received: | 10/26/17 | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 710426-06 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102714.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 102 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55, F&BI 710426 |
| Date Extracted: | 10/27/17 | Lab ID: | 07-2401 mb2 1/5 |
| Date Analyzed: | 10/27/17 | Data File: | 102708.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 92 | 31 | 163 |
| Benzo(a)anthracene-d12 | 103 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

Date of Report: 11/01/17
Date Received: 10/26/17
Project: Ave 55, F&BI 710426

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 710459-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 110 | 104 | 73-135 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 102 | 74-139 |

Date of Report: 11/01/17
Date Received: 10/26/17
Project: Ave 55, F&BI 710426

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: 710426-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 1.96 | 99 | 96 | 75-125 | 3 |
| Cadmium | mg/kg (ppm) | 10 | <1 | 109 | 106 | 75-125 | 3 |
| Chromium | mg/kg (ppm) | 50 | 16.6 | 98 | 96 | 75-125 | 2 |
| Lead | mg/kg (ppm) | 50 | 1.95 | 101 | 98 | 75-125 | 3 |
| Mercury | mg/kg (ppm | 5 | <1 | 102 | 103 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 98 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 108 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 108 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 107 | 80-120 |
| Mercury | mg/kg (ppm) | 5 | 103 | 80-120 |

Date of Report: 11/01/17
Date Received: 10/26/17
Project: Ave 55, F&BI 710426

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 710422-06 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 90 | 23-144 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 90 | 32-149 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 97 | 23-176 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 95 | 42-139 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 91 | 21-163 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 23-170 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 83 | 31-146 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 99 | 99 | 51-115 | 0 |
| Chrysene | mg/kg (ppm) | 0.17 | 100 | 102 | 55-129 | 2 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 97 | 102 | 56-123 | 5 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 98 | 100 | 54-131 | 2 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 92 | 92 | 51-118 | 0 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 96 | 99 | 49-148 | 3 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 97 | 99 | 50-141 | 2 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte is likely due to laboratory contamination.

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

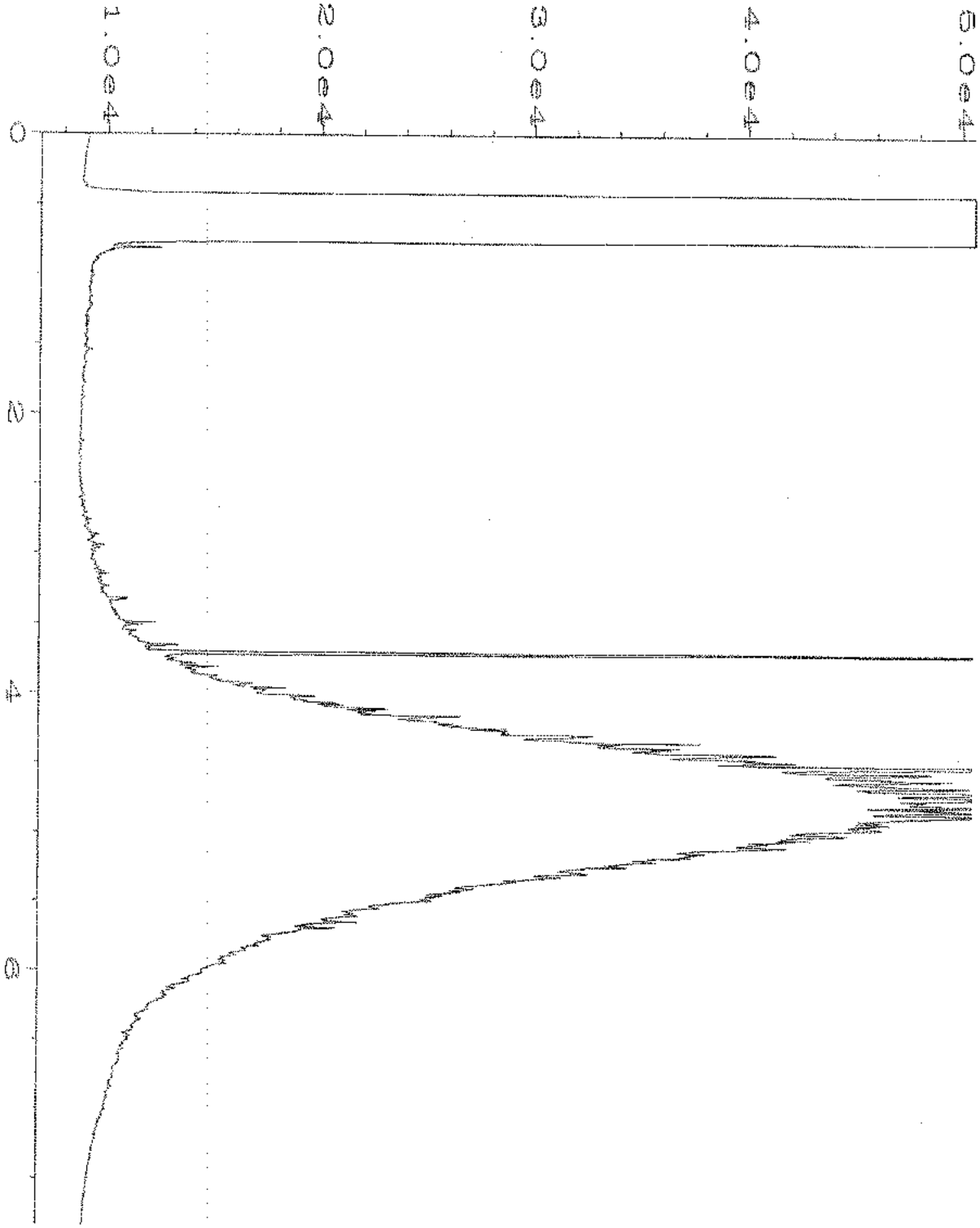
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

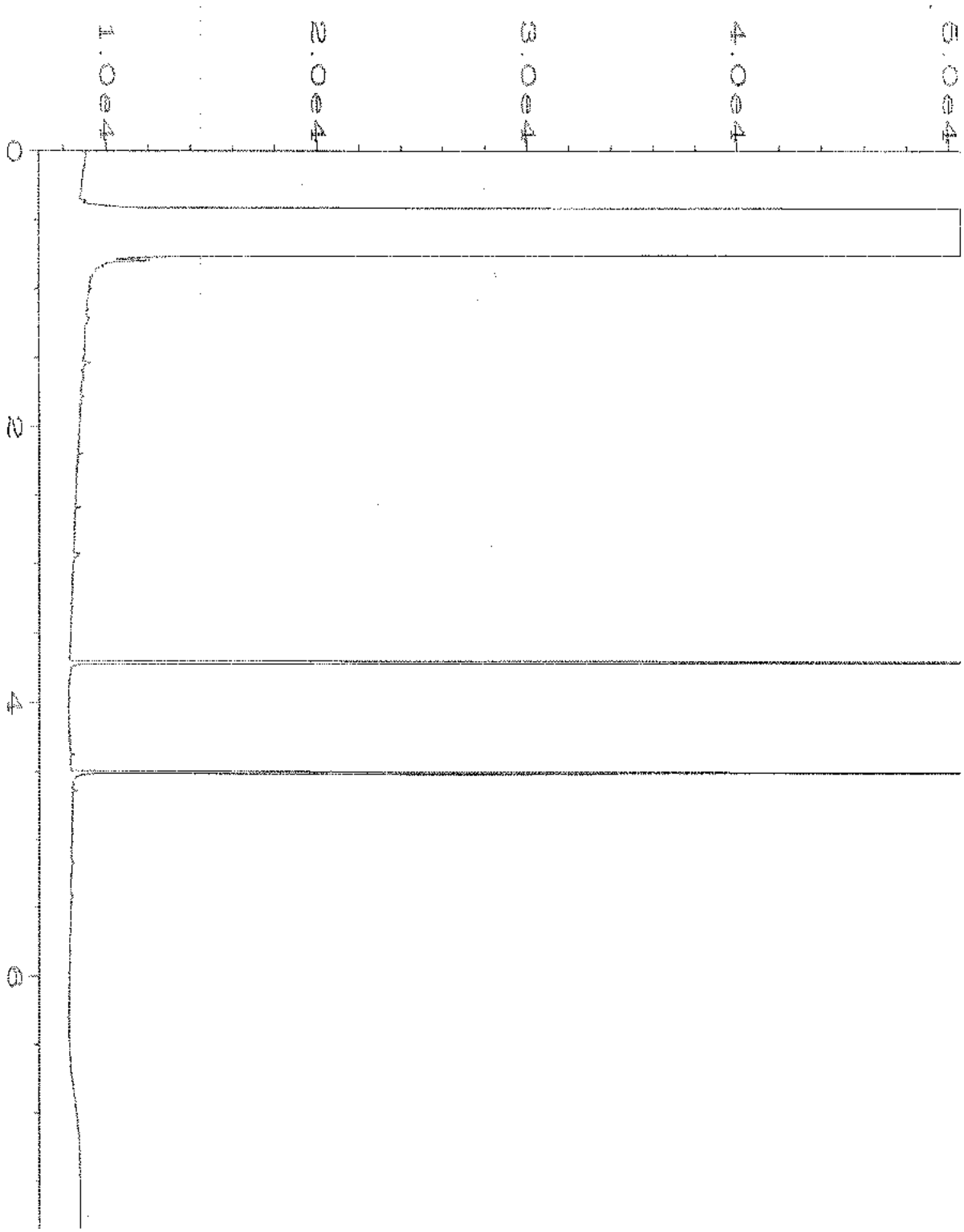
vo - The value reported fell outside the control limits established for this analyte.

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

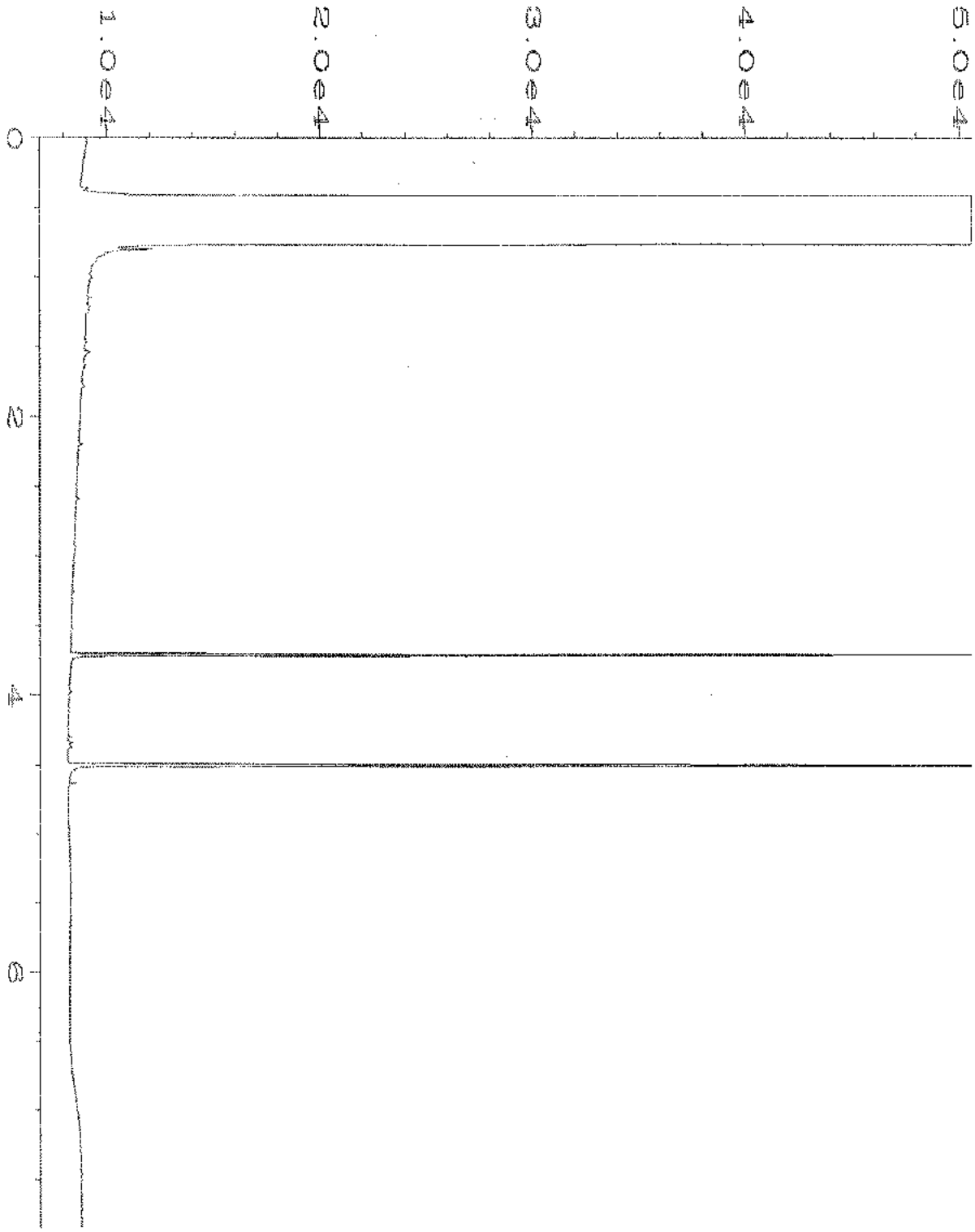



Data File Name : C:\HPCHEM\4\DATA\10-27-17\008F0301.D
Operator : mwdl
Instrument : GC#4
Sample Name : 710426-01
Run Time Bar Code:
Acquired on : 27 Oct 17 09:36 AM
Report Created on: 27 Oct 17 12:08 PM

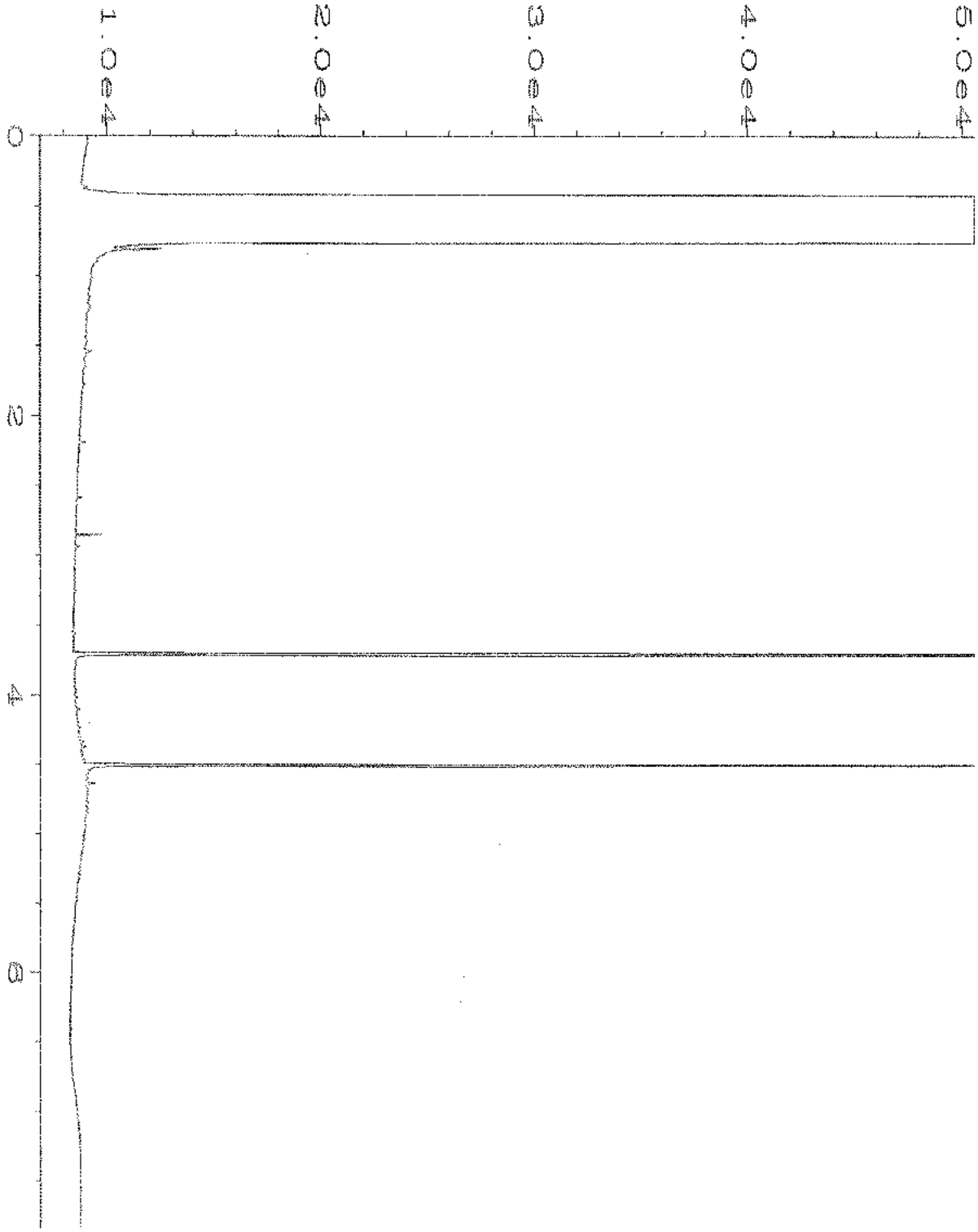
Page Number : 1
Vial Number : 8
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH



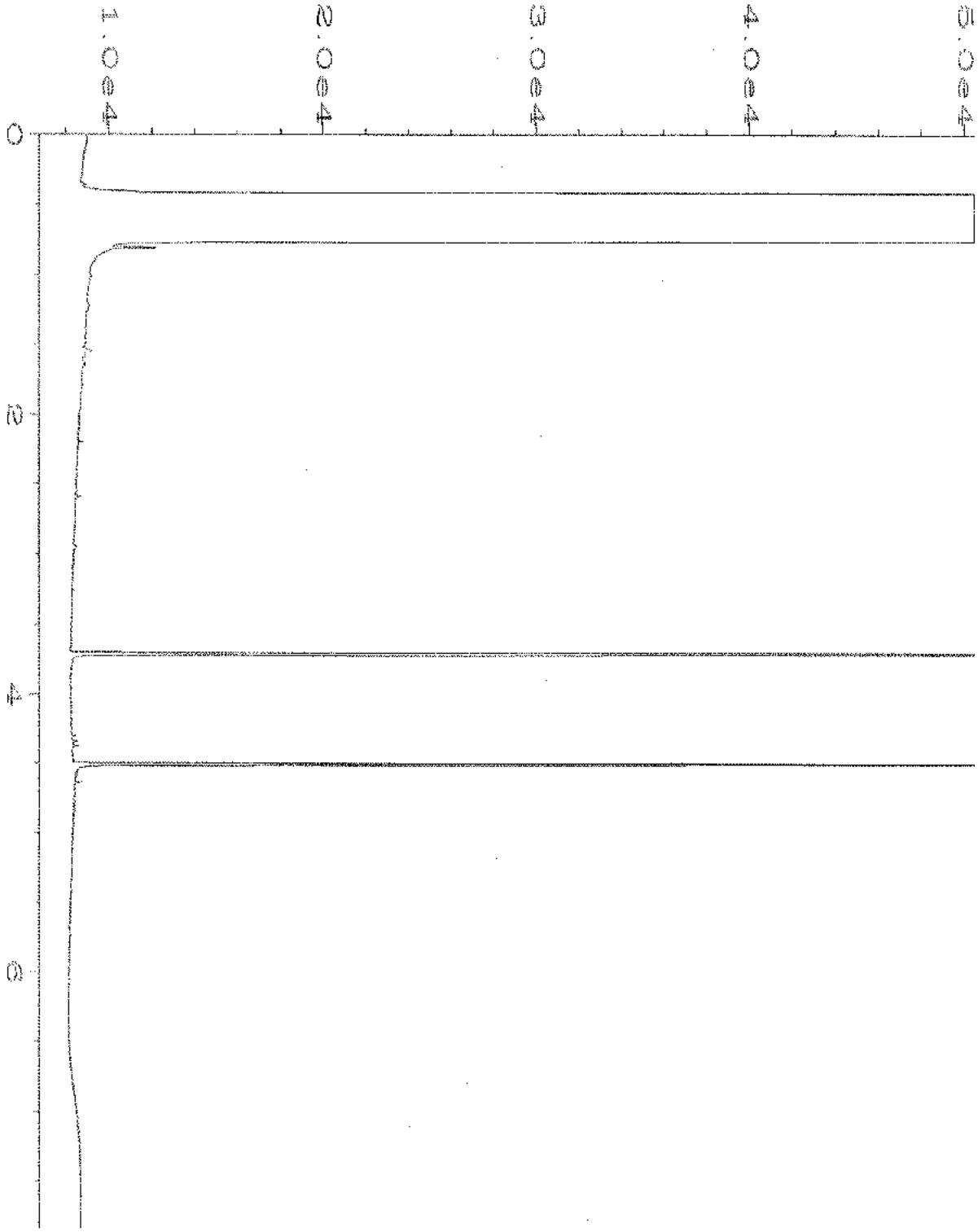

| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\009F0301.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 9 |
| Sample Name | : 710426-02 | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 3 |
| Acquired on | : 27 Oct 17 09:48 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:08 PM | Analysis Method | : DX.MTH |



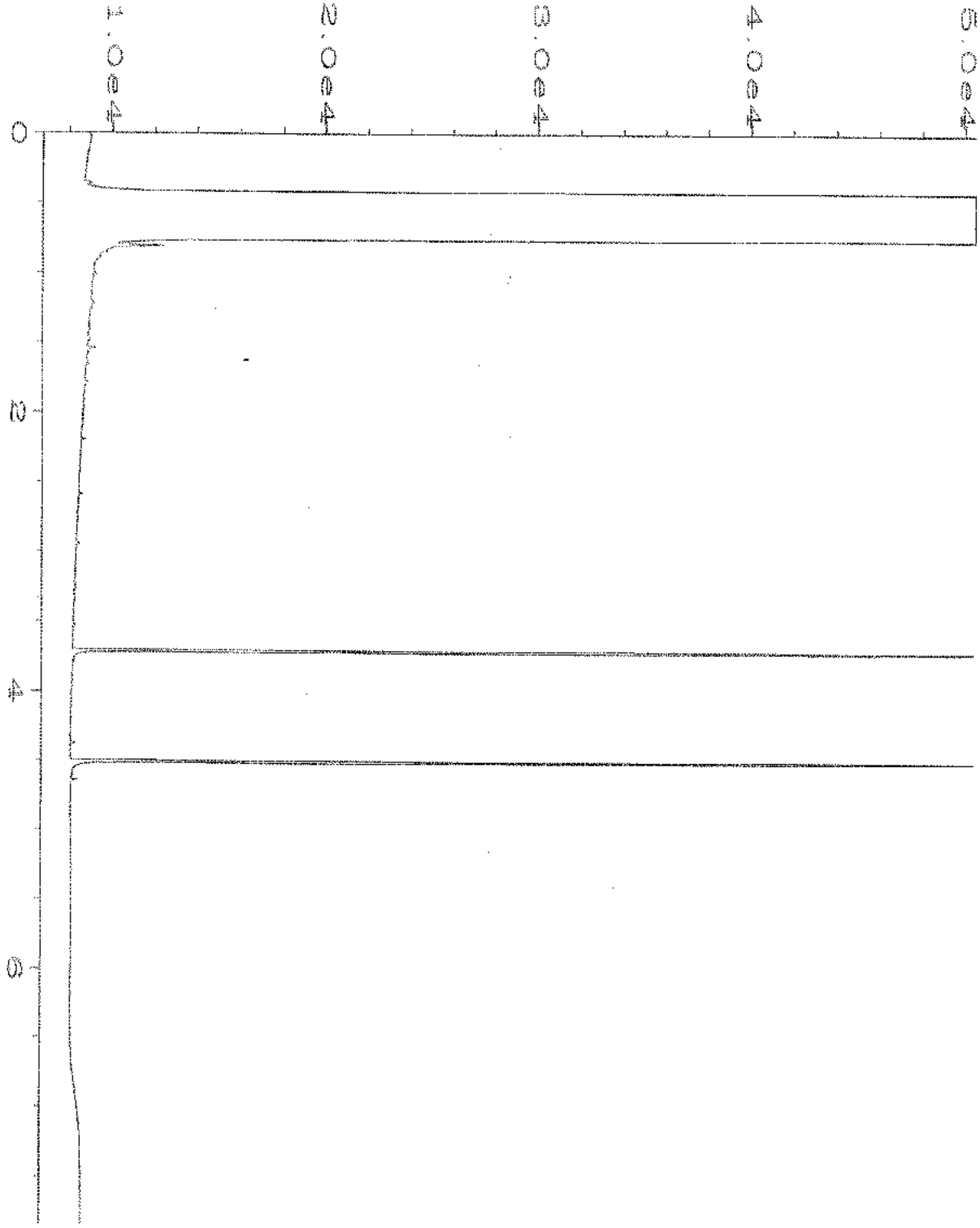

| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\010F0301.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 10 |
| Sample Name | : 710426-03 | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 3 |
| Acquired on | : 27 Oct 17 10:00 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:10 PM | Analysis Method | : DX.MTH |




| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\011F0301.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 11 |
| Sample Name | : 710426-04 | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 3 |
| Acquired on | : 27 Oct 17 10:12 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:08 PM | Analysis Method | : DX.MTH |

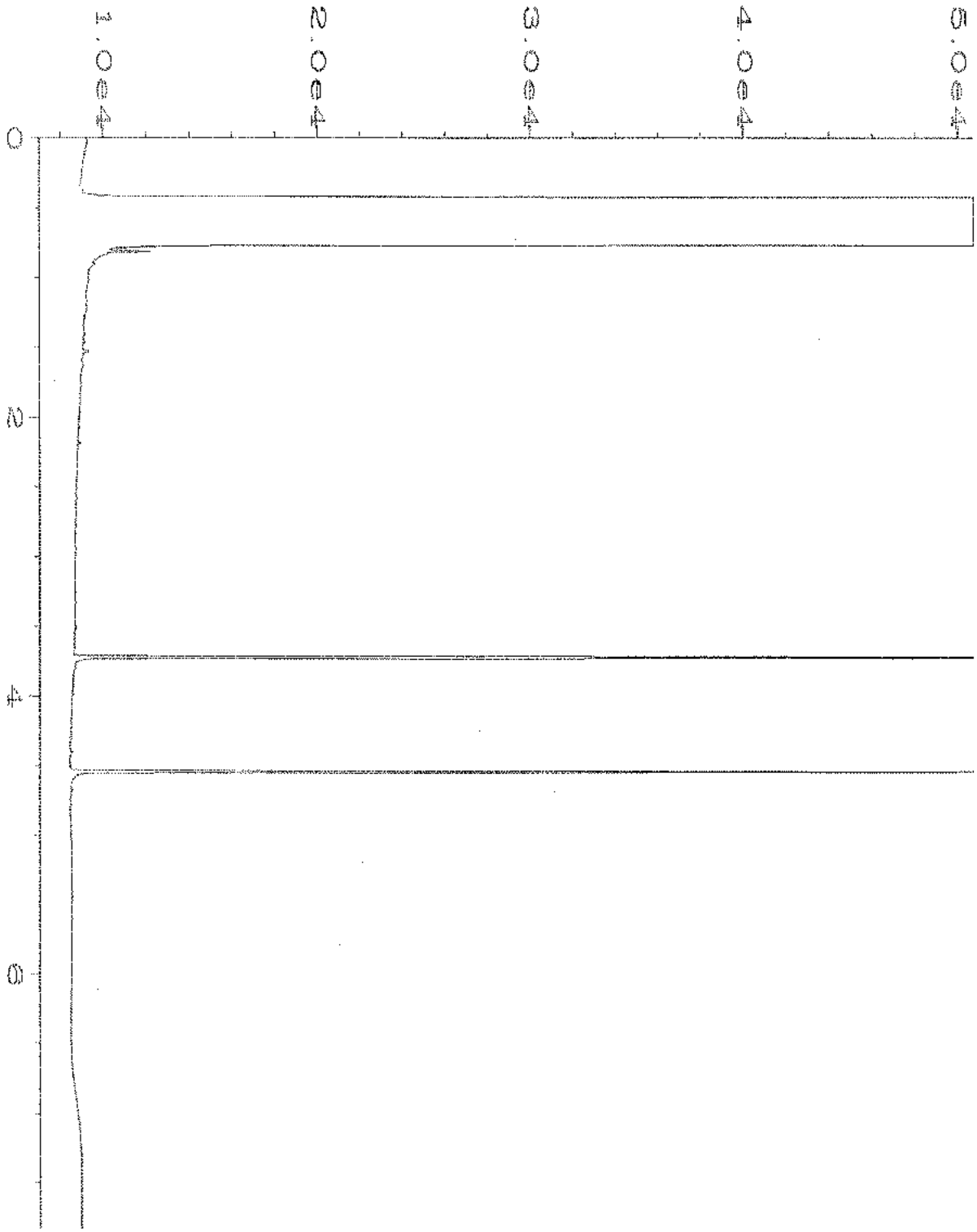


| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\012F0301.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 12 |
| Sample Name | : 710426-05 | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 3 |
| Acquired on | : 27 Oct 17 10:24 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:09 PM | Analysis Method | : DX.MTH |



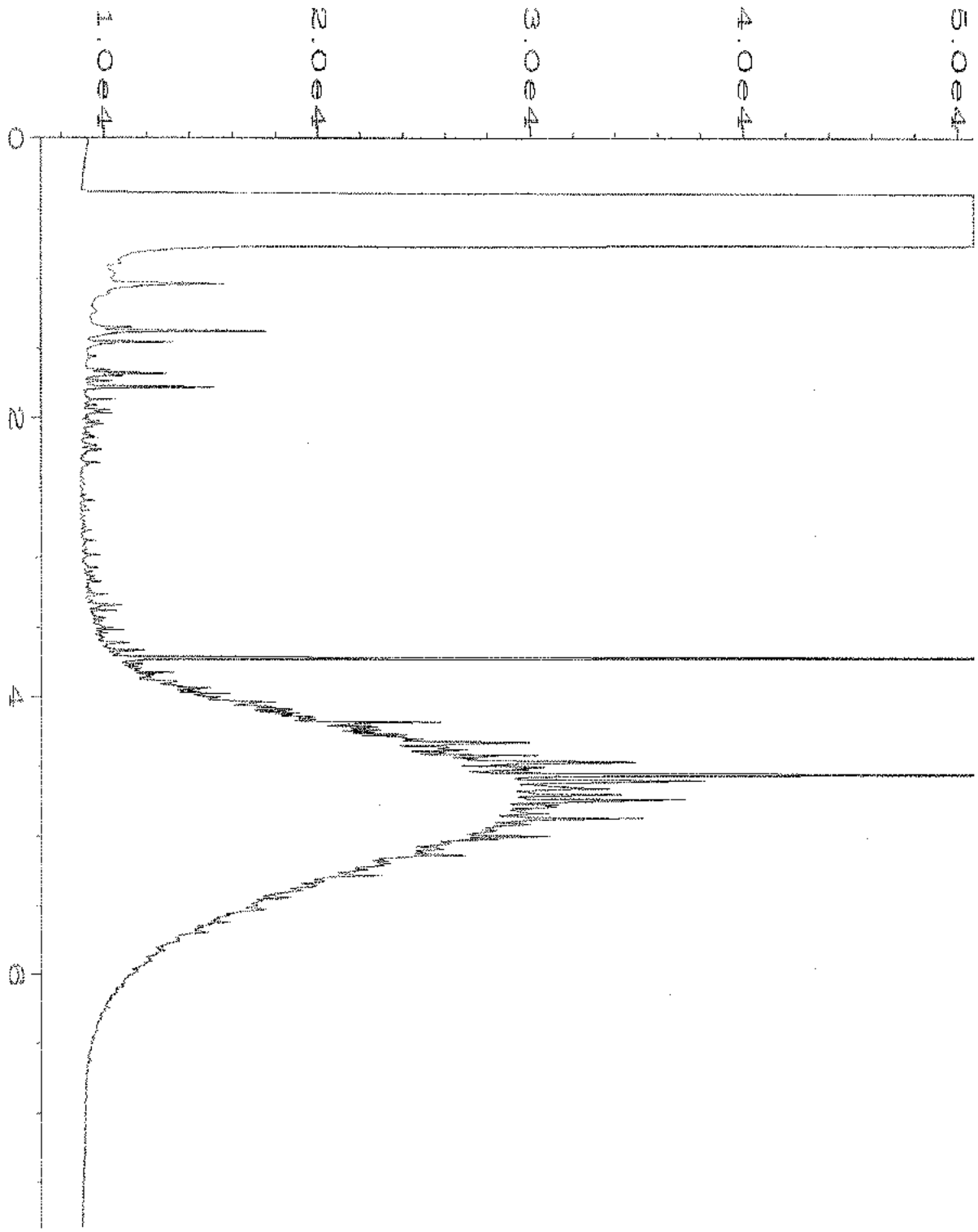

Data File Name : C:\HPCHEM\4\DATA\10-27-17\013F0301.D
Operator : mwdl
Instrument : GC#4
Sample Name : 710426-06
Run Time Bar Code:
Acquired on : 27 Oct 17 10:36 AM
Report Created on: 27 Oct 17 12:09 PM

Page Number : 1
Vial Number : 13
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH

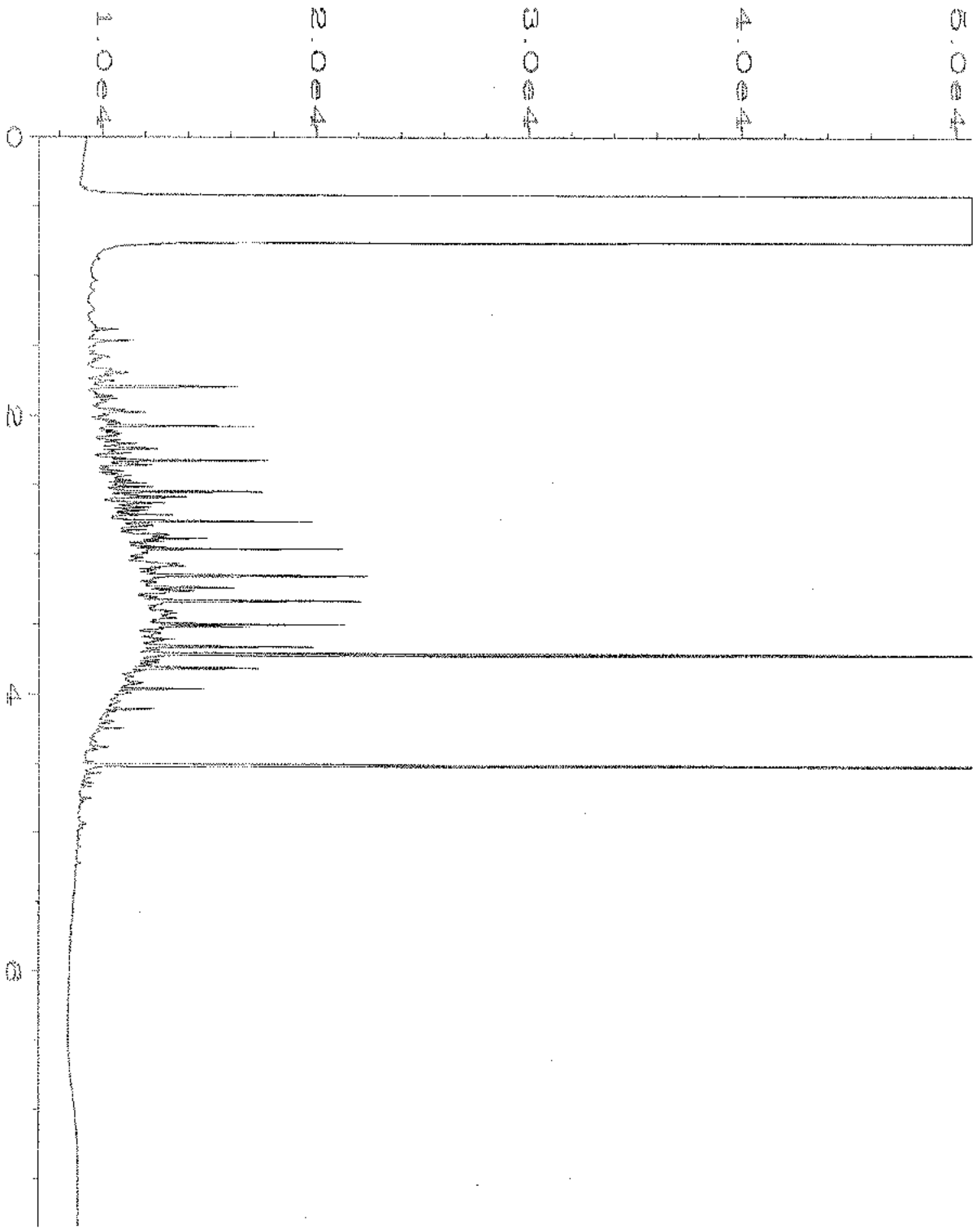



Data File Name : C:\HPCHEM\4\DATA\10-27-17\006F0301.D
Operator : mwdl
Instrument : GC#4
Sample Name : 07-2410 mb
Run Time Bar Code:
Acquired on : 27 Oct 17 09:14 AM
Report Created on: 27 Oct 17 12:08 PM

Page Number : 1
Vial Number : 6
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH




| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\096F0401.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 96 |
| Sample Name | : HCIDs G/M 50-146 | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 4 |
| Acquired on | : 27 Oct 17 11:28 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:09 PM | Analysis Method | : DX.MTH |




| | | | |
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\10-27-17\097F0401.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 97 |
| Sample Name | : HCIDs Dx 50-101B | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 4 |
| Acquired on | : 27 Oct 17 11:41 AM | Instrument Method | : DX.MTH |
| Report Created on | : 27 Oct 17 12:09 PM | Analysis Method | : DX.MTH |

F 10426

# SAMPLE CHAIN OF CUSTODY

NE 10-26-17

VSI / BI2

Page # _____ of _____

Report To DREW Z & TOM COLLIGAN

Company AVE. 55

Address 600 UNIVERSITY ST. #2305

City, State, ZIP SEATTLE, WA 98107

Phone 206-707-9696 Email _____

SAMPLERS (*signature*)

PROJECT NAME: AVE. 55

PO #

REMARKS

INVOICE TO: AVE. 55

**TURNAROUND TIME**
- ☐ Standard Turnaround
- ☒ RUSH 24 HR
- Rush charges authorized by: _____

**SAMPLE DISPOSAL**
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

| Sample ID | Lab ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel/MD | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | PAHs 8270D SIM | cPAH | MTCA Metals (8, Ar, Cd, Hg, Cr) | Pb | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-47 | 01A-E | WS 1 | 10/26 | 2:44 | SOIL | | X | (X) | | | | | | X | X | | (X) per TC |
| SP-48 | 02 | WS 2 | 10/26 | 2:50 | SOIL | | X | | | | | | | X | X | | 10/26/17 |
| SP-49 | 03 | WS 3 | 10/26 | 2:57 | SOIL | | X | | | | | | | X | X | | MG |
| SP-50 | 04 | WS 4 | 10/26 | 3:03 | SOIL | | X | | | | | | | X | X | | |
| SP-51 | 05 | WS 5 | 10/26 | 3:10 | SOIL | | X | | | | | | | X | X | | |
| SP-52 | 06 | WS 6 | 10/26 | 3:16 | SOIL | | X | | | | | | | X | X | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED

Samples received at 12 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZATSOROWSKI | AVE 55 | 10/26 | 3:17 |
| Received by: | Jon Shaw | FBI | 10/26 | 17:45 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 7, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on August 28, 2017 from the Avenue 55, F&BI 708495 project. There are 25 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: Drew Zaborowski
FDS0907R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 28, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Avenue 55, F&BI 708495 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 708495 -01 | SP-14 |
| 708495 -02 | SP-15 |
| 708495 -03 | SP-16 |
| 708495 -04 | SP-17 |
| 708495 -05 | SP-18 |

All quality control requirements were acceptable.

Date of Report: 09/07/17
Date Received: 08/28/17
Project: Avenue 55, F&BI 708495
Date Extracted: 08/29/17
Date Analyzed: 08/29/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| SP-14<br>708495-01 | <50 | <250 | 99 |
| SP-15<br>708495-02 | <50 | <250 | 98 |
| SP-16<br>708495-03 | <50 | <250 | 98 |
| SP-17<br>708495-04 | <50 | <250 | 105 |
| SP-18<br>708495-05 | <50 | <250 | 99 |
| Method Blank<br>07-1877 MB | <50 | <250 | 100 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-14 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | 708495-01 |
| Date Analyzed: | 09/06/17 | Data File: | 708495-01.031 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.33 |
| Lead | 2.23 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-15 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | 708495-02 |
| Date Analyzed: | 09/06/17 | Data File: | 708495-02.032 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.04 |
| Lead | 1.52 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-16 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | 708495-03 |
| Date Analyzed: | 09/06/17 | Data File: | 708495-03.033 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.21 |
| Lead | 3.36 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-17 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | 708495-04 |
| Date Analyzed: | 09/06/17 | Data File: | 708495-04.034 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.78 |
| Lead | 2.72 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-18 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | 708495-05 |
| Date Analyzed: | 09/06/17 | Data File: | 708495-05.035 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | 1.43 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/31/17 | Lab ID: | I7-469 mb |
| Date Analyzed: | 08/31/17 | Data File: | I7-469 mb.076 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-14 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-01 1/5 |
| Date Analyzed: | 08/30/17 | Data File: | 083008.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 86 | 31 | 163 |
| Benzo(a)anthracene-d12 | 97 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-15 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-02 1/5 |
| Date Analyzed: | 08/30/17 | Data File: | 083009.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 100 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-16 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-03 1/5 |
| Date Analyzed: | 08/30/17 | Data File: | 083010.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 102 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | 0.012 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | 0.013 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-17 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-04 1/5 |
| Date Analyzed: | 08/30/17 | Data File: | 083011.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 91 | 31 | 163 |
| Benzo(a)anthracene-d12 | 107 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | 0.043 |
| Chrysene | 0.046 |
| Benzo(a)pyrene | 0.037 |
| Benzo(b)fluoranthene | 0.042 |
| Benzo(k)fluoranthene | 0.019 |
| Indeno(1,2,3-cd)pyrene | 0.017 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-18 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-05 1/5 |
| Date Analyzed: | 08/30/17 | Data File: | 083012.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 85 | 31 | 163 |
| Benzo(a)anthracene-d12 | 102 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 07-1878 mb 1/5 |
| Date Analyzed: | 08/29/17 | Data File: | 082910.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 87 | 31 | 163 |
| Benzo(a)anthracene-d12 | 105 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-14 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-01 |
| Date Analyzed: | 08/29/17 | Data File: | 082917.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 62 | 142 |
| Toluene-d8 | 104 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-15 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-02 |
| Date Analyzed: | 08/29/17 | Data File: | 082918.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 105 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-16 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-03 |
| Date Analyzed: | 08/29/17 | Data File: | 082919.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 104 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-17 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-04 |
| Date Analyzed: | 08/29/17 | Data File: | 082920.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 62 | 142 |
| Toluene-d8 | 104 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-18 | Client: | Floyd-Snider |
| Date Received: | 08/28/17 | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 708495-05 |
| Date Analyzed: | 08/30/17 | Data File: | 083017.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 708495 |
| Date Extracted: | 08/29/17 | Lab ID: | 07-1851 mb |
| Date Analyzed: | 08/29/17 | Data File: | 082906.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 62 | 142 |
| Toluene-d8 | 105 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

Date of Report: 09/07/17
Date Received: 08/28/17
Project: Avenue 55, F&BI 708495

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 708486-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 2,000 | 90 b | 115 b | 63-146 | 24 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 86 | 79-144 |

Date of Report: 09/07/17
Date Received: 08/28/17
Project: Avenue 55, F&BI 708495

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: 708491-21 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 7.20 | 81 b | 73 b | 75-125 | 10 b |
| Lead | mg/kg (ppm) | 50 | 10.6 | 94 | 89 | 75-125 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 89 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 99 | 80-120 |

Date of Report: 09/07/17
Date Received: 08/28/17
Project: Avenue 55, F&BI 708495

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 708497-09 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 91 | 91 | 23-144 | 0 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 89 | 88 | 32-149 | 1 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 83 | 87 | 23-176 | 5 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 89 | 93 | 42-139 | 4 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 84 | 21-163 | 2 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 83 | 84 | 23-170 | 1 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 83 | 83 | 31-146 | 0 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 103 | 51-115 |
| Chrysene | mg/kg (ppm) | 0.17 | 103 | 55-129 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 94 | 56-123 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 101 | 54-131 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 88 | 51-118 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 103 | 49-148 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 105 | 50-141 |

Date of Report: 09/07/17
Date Received: 08/28/17
Project: Avenue 55, F&BI 708495

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

Laboratory Code: 708362-20 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 42 | 41 | 10-138 | 2 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 54 | 50 | 10-176 | 8 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 68 | 65 | 10-160 | 5 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 85 | 82 | 10-156 | 4 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 75 | 71 | 14-137 | 5 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 82 | 77 | 19-140 | 6 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 81 | 80 | 25-135 | 1 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 82 | 77 | 12-160 | 6 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 81 | 77 | 10-156 | 5 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 84 | 81 | 21-139 | 4 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 76 | 76 | 20-133 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | 66 | 22-139 |
| Chloroethane | mg/kg (ppm) | 2.5 | 77 | 10-163 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 93 | 47-128 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 106 | 42-132 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 99 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 104 | 68-115 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 103 | 72-113 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 102 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 102 | 62-131 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 104 | 64-117 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 95 | 72-114 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

708495

# SAMPLE CHAIN OF CUSTODY

ME 08/28/17 BEL / VSL

Page # ____ of ____

Report To DREW ZABOROWSKI & TOM COLLIGAN

Company AVENUE 55

Address 600 UNIVERSITY ST. #2305

City, State, ZIP SEATTLE, WA 98101

Phone 206-707-9886 Email DZABOROWSKI@AVENUE55.NET

SAMPLERS (signature)

PROJECT NAME: AVENUE 55

PO #:

REMARKS:

INVOICE TO: AVE.55

**TURNAROUND TIME**
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | SPAH 8310 PAHs 8270D-SIM | ARSENIC/LEAD | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-14 | 01A-B | 23-A | 8/28 | 1:03 | SOIL | 5 | | X | | | X | | X | X | | | |
| SP-15 | 02 | 23-B | 8/28 | 1:12 | SOIL | | | X | | | X | | X | X | | | |
| SP-16 | 03 | 23-C | 8/28 | 1:17 | SOIL | | | X | | | X | | X | X | | | |
| SP-17 | 04 | 25-A | 8/28 | 1:24 | SOIL | | | X | | | X | | X | X | | | |
| SP-18 | 05 | 25-B | 8/28 | 1:29 | SOIL | | | X | | | X | | X | X | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED

Samples received at 3 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVENUE 55 | 8/28/10 | 1:00 |
| Received by: | Matt Langston | FBInc | 8/28/17 | 1645 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 22, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 12, 2017 from the Avenue 55, F&BI 709185 project. There are 8 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: Drew Zaborowski
FDS0922R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Avenue 55, F&BI 709185 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 709185 -01 | SP-19 (9/8 B Roose) |
| 709185 -02 | SP-20 (9/8 H Roose) |

All quality control requirements were acceptable.

Date of Report: 09/22/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709185
Date Extracted: 09/13/17
Date Analyzed: 09/13/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 53-144) |
|---|---|---|---|---|
| SP-19 (9/8 B Roose)<br>709185-01 | ND | ND | ND | 79 |
| SP-20 (9/8 H Roose)<br>709185-02 | ND | ND | ND | 77 |
| Method Blank<br>07-2007 MB | ND | ND | ND | 77 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-19 (9/8 B Roose) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 709185-01 |
| Date Analyzed: | 09/13/17 | Data File: | 091317.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 62 | 142 |
| Toluene-d8 | 99 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-20 (9/8 H Roose) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 709185-02 |
| Date Analyzed: | 09/13/17 | Data File: | 091318.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 07-1919 mb |
| Date Analyzed: | 09/13/17 | Data File: | 091308.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 62 | 142 |
| Toluene-d8 | 100 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

Date of Report: 09/22/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709185

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

Laboratory Code: 709180-07 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2.5 | <0.5 | 14 | 16 | 10-142 | 13 |
| Chloromethane | mg/kg (ppm) | 2.5 | <0.5 | 43 | 45 | 10-126 | 5 |
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 41 | 42 | 10-138 | 2 |
| Bromomethane | mg/kg (ppm) | 2.5 | <0.5 | 59 | 58 | 10-163 | 2 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 56 | 58 | 10-176 | 4 |
| Trichlorofluoromethane | mg/kg (ppm) | 2.5 | <0.5 | 44 | 45 | 10-176 | 2 |
| Acetone | mg/kg (ppm) | 12.5 | <0.5 | 76 | 78 | 10-163 | 3 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 56 | 58 | 10-160 | 4 |
| Hexane | mg/kg (ppm) | 2.5 | <0.25 | 40 | 40 | 10-137 | 0 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 74 | 75 | 10-156 | 1 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2.5 | <0.05 | 71 | 73 | 21-145 | 3 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 63 | 64 | 14-137 | 2 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 68 | 70 | 19-140 | 3 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 73 | 73 | 10-158 | 0 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 72 | 72 | 25-135 | 0 |
| Chloroform | mg/kg (ppm) | 2.5 | <0.05 | 72 | 74 | 21-145 | 3 |
| 2-Butanone (MEK) | mg/kg (ppm) | 12.5 | <0.5 | 82 | 83 | 19-147 | 1 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 72 | 73 | 12-160 | 1 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 68 | 69 | 10-156 | 1 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 65 | 67 | 17-140 | 3 |
| Carbon tetrachloride | mg/kg (ppm) | 2.5 | <0.05 | 66 | 67 | 9-164 | 2 |
| Benzene | mg/kg (ppm) | 2.5 | <0.03 | 69 | 71 | 29-129 | 3 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 69 | 71 | 21-139 | 3 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 77 | 78 | 30-135 | 1 |
| Bromodichloromethane | mg/kg (ppm) | 2.5 | <0.05 | 74 | 75 | 23-155 | 1 |
| Dibromomethane | mg/kg (ppm) | 2.5 | <0.05 | 74 | 76 | 23-145 | 3 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 12.5 | <0.5 | 81 | 80 | 24-155 | 1 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 78 | 28-144 | 3 |
| Toluene | mg/kg (ppm) | 2.5 | <0.05 | 70 | 74 | 35-130 | 6 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 78 | 26-149 | 3 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 78 | 79 | 10-205 | 1 |
| 2-Hexanone | mg/kg (ppm) | 12.5 | <0.5 | 86 | 88 | 15-166 | 2 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 78 | 79 | 31-137 | 1 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 70 | 71 | 20-133 | 1 |
| Dibromochloromethane | mg/kg (ppm) | 2.5 | <0.05 | 74 | 76 | 28-150 | 3 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2.5 | <0.05 | 75 | 78 | 28-142 | 4 |
| Chlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 77 | 32-129 | 1 |
| Ethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 74 | 76 | 32-137 | 3 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | <0.05 | 74 | 76 | 31-143 | 3 |
| m,p-Xylene | mg/kg (ppm) | 5 | <0.1 | 75 | 76 | 34-136 | 1 |
| o-Xylene | mg/kg (ppm) | 2.5 | <0.05 | 74 | 74 | 33-134 | 0 |
| Styrene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 78 | 35-137 | 3 |
| Isopropylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 77 | 31-142 | 1 |
| Bromoform | mg/kg (ppm) | 2.5 | <0.05 | 77 | 79 | 21-156 | 3 |
| n-Propylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 79 | 23-146 | 1 |
| Bromobenzene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 80 | 34-130 | 3 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 75 | 76 | 18-149 | 1 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | <0.05 | 82 | 83 | 28-140 | 1 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 80 | 81 | 25-144 | 1 |
| 2-Chlorotoluene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 80 | 31-134 | 1 |
| 4-Chlorotoluene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 78 | 31-136 | 1 |
| tert-Butylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 79 | 30-137 | 3 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 79 | 10-182 | 1 |
| sec-Butylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 79 | 23-145 | 0 |
| p-Isopropyltoluene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 79 | 21-149 | 0 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 77 | 30-131 | 1 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 78 | 29-129 | 1 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 75 | 77 | 31-132 | 3 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2.5 | <0.5 | 80 | 81 | 11-161 | 1 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2.5 | <0.25 | 78 | 80 | 22-142 | 3 |
| Hexachlorobutadiene | mg/kg (ppm) | 2.5 | <0.25 | 80 | 79 | 10-142 | 1 |
| Naphthalene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 79 | 14-157 | 0 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2.5 | <0.25 | 79 | 80 | 20-144 | 1 |

Date of Report: 09/22/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709185

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

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2.5 | 61 | 10-146 |
| Chloromethane | mg/kg (ppm) | 2.5 | 79 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 2.5 | 82 | 22-139 |
| Bromomethane | mg/kg (ppm) | 2.5 | 95 | 38-114 |
| Chloroethane | mg/kg (ppm) | 2.5 | 91 | 10-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 2.5 | 85 | 10-196 |
| Acetone | mg/kg (ppm) | 12.5 | 98 | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 90 | 47-128 |
| Hexane | mg/kg (ppm) | 2.5 | 89 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 99 | 42-132 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2.5 | 94 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 91 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 94 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2.5 | 100 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 95 | 72-113 |
| Chloroform | mg/kg (ppm) | 2.5 | 94 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 12.5 | 106 | 57-123 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 94 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 93 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2.5 | 91 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 2.5 | 91 | 60-139 |
| Benzene | mg/kg (ppm) | 2.5 | 91 | 68-114 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 93 | 64-117 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2.5 | 100 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 2.5 | 96 | 72-130 |
| Dibromomethane | mg/kg (ppm) | 2.5 | 97 | 70-120 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 12.5 | 101 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | 100 | 75-136 |
| Toluene | mg/kg (ppm) | 2.5 | 94 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | 99 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2.5 | 100 | 75-113 |
| 2-Hexanone | mg/kg (ppm) | 12.5 | 109 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2.5 | 100 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 94 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 2.5 | 97 | 74-125 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2.5 | 98 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 2.5 | 97 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 2.5 | 97 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | 96 | 69-135 |
| m,p-Xylene | mg/kg (ppm) | 5 | 97 | 78-122 |
| o-Xylene | mg/kg (ppm) | 2.5 | 96 | 77-124 |
| Styrene | mg/kg (ppm) | 2.5 | 99 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 2.5 | 98 | 76-127 |
| Bromoform | mg/kg (ppm) | 2.5 | 99 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 2.5 | 101 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 2.5 | 101 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2.5 | 97 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | 106 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2.5 | 100 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 2.5 | 101 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 2.5 | 100 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 2.5 | 100 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2.5 | 101 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 2.5 | 102 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 2.5 | 102 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2.5 | 98 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2.5 | 100 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2.5 | 97 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2.5 | 103 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2.5 | 102 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 2.5 | 100 | 50-153 |
| Naphthalene | mg/kg (ppm) | 2.5 | 103 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2.5 | 103 | 63-138 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

709185

# SAMPLE CHAIN OF CUSTODY

ME 09-12-17 VSI

Page 1 of 1 BOL

Report To DREW Z. & TOM COLLIGAN

Company AVENUE 55

Address 600 UNIVERSITY ST. # 2305

City, State, ZIP SEATTLE, WA 98101

Phone 206-707-9696 Email DZABOROWSKI@AVENUE55.NET

SAMPLERS (*signature*)

PROJECT NAME: AVENUE 55

PO #:

REMARKS:

INVOICE TO: AVE. 55

**TURNAROUND TIME**
- ☐ Standard Turnaround
- ☒ RUSH 24 HR
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | ~~PAHs 8270D SIM~~ | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-19 (9/8-B-ROOSE) | 01A-E | 9/8 | 2:57 | SOIL | | X | ~~X~~ | ~~X~~ | ~~X~~ | X | | | | | | | * HCID only. Follow up if detections — 9/12/17 |
| SP-20 (9/8 H-ROOSE) | 021 | 9/8 | 3:05 | SOIL | | X | ~~X~~ | ~~X~~ | ~~X~~ | X | | | | | | | |
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Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE. 55 | 9/12 | 3:08 |
| Received by: | V 12 14 | FBI | 9/12 | 3:08 PM |
| Relinquished by: | | | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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September 25, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 15, 2017 from the Avenue 55, F&BI 709262 project. There are 16 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: Drew Zaborowski
FDS0925R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 15, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Avenue 55, F&BI 709262 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 709262 -01 | SP-28-9/14 B.31 |

All quality control requirements were acceptable.

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262
Date Extracted: 09/18/17
Date Analyzed: 09/18/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| SP-28-9/14 B.31<br>709262-01 | <2 | 91 |
| Method Blank<br>07-1981 MB | <2 | 85 |

Date of Report: 09/25/17
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Date Analyzed: 09/18/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SP-28-9/14 B.31<br>709262-01 | <50 | <250 | 123 |
| Method Blank<br>07-2034 MB | <50 | <250 | 116 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 709262-01 |
| Date Analyzed: | 09/20/17 | Data File: | 709262-01.061 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | 1.62 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | I7-507 mb |
| Date Analyzed: | 09/20/17 | Data File: | I7-507 mb.046 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Cadmium | <1 |
| Lead | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 709262-01 1/5 |
| Date Analyzed: | 09/19/17 | Data File: | 091915.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 101 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/19/17 | Lab ID: | 07-2042 mb 1/5 |
| Date Analyzed: | 09/19/17 | Data File: | 091903.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 84 | 31 | 163 |
| Benzo(a)anthracene-d12 | 99 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-28-9/14 B.31 | Client: | Floyd-Snider |
| Date Received: | 09/15/17 | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/18/17 | Lab ID: | 709262-01 |
| Date Analyzed: | 09/19/17 | Data File: | 091854.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 99 | 55 | 145 |
| 4-Bromofluorobenzene | 99 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709262 |
| Date Extracted: | 09/18/17 | Lab ID: | 07-2021 mb |
| Date Analyzed: | 09/18/17 | Data File: | 091812.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 57 | 121 |
| Toluene-d8 | 102 | 63 | 127 |
| 4-Bromofluorobenzene | 102 | 60 | 133 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 709235-17 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <2 | <2 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 100 | 61-153 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 709267-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 3,500 | 83 b | 102 b | 73-135 | 21 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 94 | 74-139 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: 709262-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <1 | 96 | 104 | 75-125 | 8 |
| Cadmium | mg/kg (ppm) | 10 | <1 | 98 | 104 | 75-125 | 6 |
| Lead | mg/kg (ppm) | 50 | 1.52 | 96 | 101 | 75-125 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 96 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 101 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 110 | 80-120 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 709262-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 96 | 23-144 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 94 | 32-149 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 93 | 23-176 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 99 | 42-139 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 86 | 21-163 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 23-170 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 31-146 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 93 | 93 | 51-115 | 0 |
| Chrysene | mg/kg (ppm) | 0.17 | 93 | 94 | 55-129 | 1 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 90 | 92 | 56-123 | 2 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 99 | 99 | 54-131 | 0 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 82 | 83 | 51-118 | 1 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 86 | 80 | 49-148 | 7 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 90 | 86 | 50-141 | 5 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

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

Laboratory Code: 709272-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2.5 | <0.5 | 12 | 11 | 10-142 | 9 |
| Chloromethane | mg/kg (ppm) | 2.5 | <0.5 | 42 | 37 | 10-126 | 13 |
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 38 | 35 | 10-138 | 8 |
| Bromomethane | mg/kg (ppm) | 2.5 | <0.5 | 56 | 51 | 10-163 | 9 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 61 | 55 | 10-176 | 10 |
| Trichlorofluoromethane | mg/kg (ppm) | 2.5 | <0.5 | 40 | 38 | 10-176 | 5 |
| Acetone | mg/kg (ppm) | 12.5 | <0.5 | 79 | 72 | 10-163 | 9 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 56 | 53 | 10-160 | 6 |
| Hexane | mg/kg (ppm) | 2.5 | <0.25 | 33 | 30 | 10-137 | 10 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 74 | 68 | 10-156 | 8 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2.5 | <0.05 | 82 | 77 | 21-145 | 6 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 66 | 60 | 14-137 | 10 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 73 | 67 | 19-140 | 9 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 72 | 68 | 10-158 | 6 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 75 | 72 | 25-135 | 4 |
| Chloroform | mg/kg (ppm) | 2.5 | <0.05 | 78 | 71 | 21-145 | 9 |
| 2-Butanone (MEK) | mg/kg (ppm) | 12.5 | <0.5 | 88 | 84 | 19-147 | 5 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 75 | 70 | 12-160 | 7 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 69 | 65 | 10-156 | 6 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 68 | 63 | 17-140 | 8 |
| Carbon tetrachloride | mg/kg (ppm) | 2.5 | <0.05 | 65 | 62 | 9-164 | 5 |
| Benzene | mg/kg (ppm) | 2.5 | <0.03 | 74 | 68 | 29-129 | 8 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 73 | 69 | 21-139 | 6 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 82 | 77 | 30-135 | 6 |
| Bromodichloromethane | mg/kg (ppm) | 2.5 | <0.05 | 77 | 72 | 23-155 | 7 |
| Dibromomethane | mg/kg (ppm) | 2.5 | <0.05 | 78 | 73 | 23-145 | 7 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 12.5 | <0.5 | 86 | 80 | 24-155 | 7 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 28-144 | 6 |
| Toluene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 69 | 35-130 | 10 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 72 | 26-149 | 8 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 81 | 76 | 10-205 | 6 |
| 2-Hexanone | mg/kg (ppm) | 12.5 | <0.5 | 90 | 84 | 15-166 | 7 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 82 | 76 | 31-137 | 8 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 72 | 67 | 20-133 | 7 |
| Dibromochloromethane | mg/kg (ppm) | 2.5 | <0.05 | 76 | 72 | 28-150 | 5 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2.5 | <0.05 | 78 | 73 | 28-142 | 7 |
| Chlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 74 | 32-129 | 7 |
| Ethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 72 | 32-137 | 8 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | <0.05 | 77 | 71 | 31-143 | 8 |
| m,p-Xylene | mg/kg (ppm) | 5 | <0.1 | 78 | 73 | 34-136 | 7 |
| o-Xylene | mg/kg (ppm) | 2.5 | <0.05 | 78 | 73 | 33-134 | 7 |
| Styrene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 35-137 | 6 |
| Isopropylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 74 | 31-142 | 7 |
| Bromoform | mg/kg (ppm) | 2.5 | <0.05 | 78 | 73 | 21-156 | 7 |
| n-Propylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 81 | 76 | 23-146 | 6 |
| Bromobenzene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 34-130 | 6 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 73 | 18-149 | 5 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | <0.05 | 85 | 80 | 28-140 | 6 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2.5 | <0.05 | 83 | 78 | 25-144 | 6 |
| 2-Chlorotoluene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 76 | 31-134 | 5 |
| 4-Chlorotoluene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 75 | 31-136 | 5 |
| tert-Butylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 30-137 | 6 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 10-182 | 6 |
| sec-Butylbenzene | mg/kg (ppm) | 2.5 | <0.05 | 82 | 77 | 23-145 | 6 |
| p-Isopropyltoluene | mg/kg (ppm) | 2.5 | <0.05 | 81 | 76 | 21-149 | 6 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 72 | 30-131 | 7 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 79 | 74 | 29-129 | 7 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 72 | 31-132 | 5 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2.5 | <0.5 | 81 | 76 | 11-161 | 6 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2.5 | <0.25 | 79 | 74 | 22-142 | 7 |
| Hexachlorobutadiene | mg/kg (ppm) | 2.5 | <0.25 | 82 | 78 | 10-142 | 5 |
| Naphthalene | mg/kg (ppm) | 2.5 | <0.05 | 80 | 75 | 14-157 | 6 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2.5 | <0.25 | 80 | 75 | 20-144 | 6 |

Date of Report: 09/25/17
Date Received: 09/15/17
Project: Avenue 55, F&BI 709262

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

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2.5 | 47 | 10-146 |
| Chloromethane | mg/kg (ppm) | 2.5 | 68 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 2.5 | 74 | 22-139 |
| Bromomethane | mg/kg (ppm) | 2.5 | 88 | 38-114 |
| Chloroethane | mg/kg (ppm) | 2.5 | 91 | 10-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 2.5 | 80 | 10-196 |
| Acetone | mg/kg (ppm) | 12.5 | 95 | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 90 | 47-128 |
| Hexane | mg/kg (ppm) | 2.5 | 84 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 100 | 42-132 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2.5 | 98 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 93 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 96 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2.5 | 97 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 98 | 72-113 |
| Chloroform | mg/kg (ppm) | 2.5 | 97 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 12.5 | 112 | 57-123 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 96 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 94 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2.5 | 94 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 2.5 | 90 | 60-139 |
| Benzene | mg/kg (ppm) | 2.5 | 95 | 68-114 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 96 | 64-117 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2.5 | 103 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 2.5 | 96 | 72-130 |
| Dibromomethane | mg/kg (ppm) | 2.5 | 97 | 70-120 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 12.5 | 104 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | 100 | 75-136 |
| Toluene | mg/kg (ppm) | 2.5 | 95 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2.5 | 96 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2.5 | 101 | 75-113 |
| 2-Hexanone | mg/kg (ppm) | 12.5 | 109 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2.5 | 101 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 94 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 2.5 | 93 | 74-125 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2.5 | 98 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 2.5 | 97 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 2.5 | 97 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | 92 | 69-135 |
| m,p-Xylene | mg/kg (ppm) | 5 | 98 | 78-122 |
| o-Xylene | mg/kg (ppm) | 2.5 | 96 | 77-124 |
| Styrene | mg/kg (ppm) | 2.5 | 99 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 2.5 | 97 | 76-127 |
| Bromoform | mg/kg (ppm) | 2.5 | 95 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 2.5 | 98 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 2.5 | 98 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2.5 | 94 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2.5 | 101 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2.5 | 99 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 2.5 | 98 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 2.5 | 97 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 2.5 | 97 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2.5 | 97 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 2.5 | 98 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 2.5 | 98 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2.5 | 94 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2.5 | 96 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2.5 | 95 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2.5 | 96 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2.5 | 96 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 2.5 | 95 | 50-153 |
| Naphthalene | mg/kg (ppm) | 2.5 | 97 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2.5 | 96 | 63-138 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte is likely due to laboratory contamination.

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

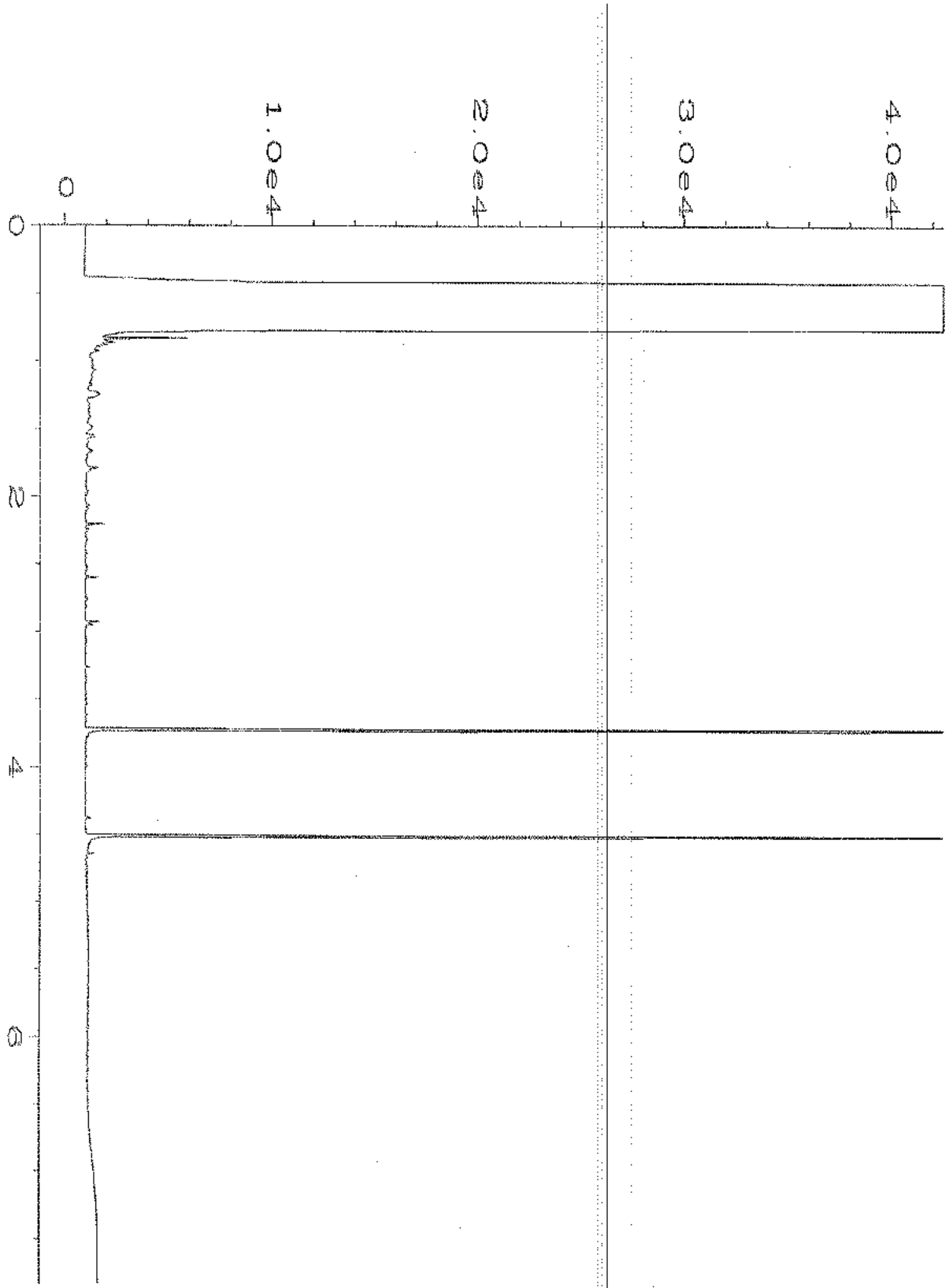
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

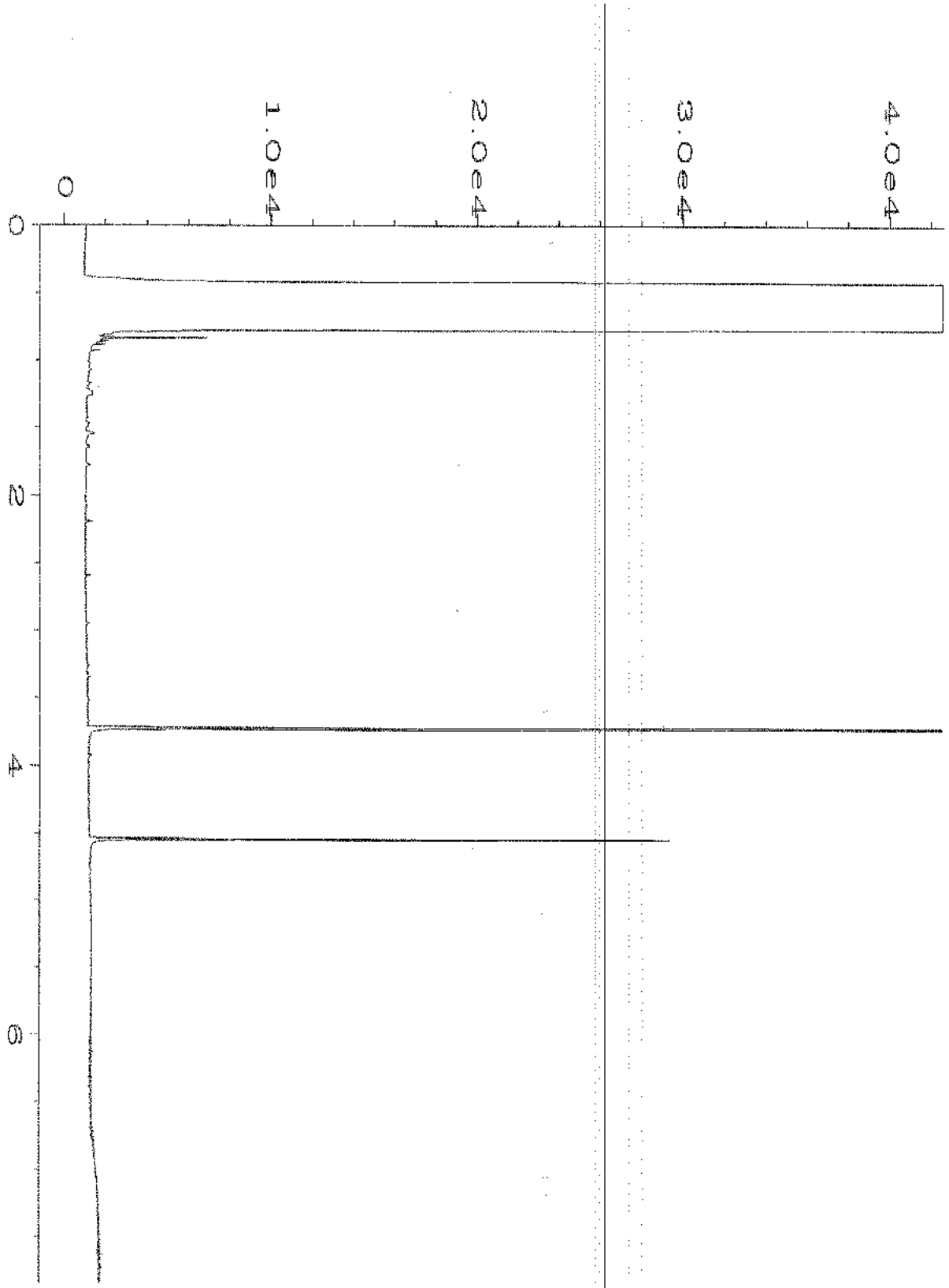
vo - The value reported fell outside the control limits established for this analyte.

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




Data File Name : C:\HPCHEM\4\DATA\09-18-17\014F0301.D
Operator : mwdl
Instrument : GC#4
Sample Name : 709262-01
Run Time Bar Code:
Acquired on : 18 Sep 17 10:26 AM
Report Created on: 22 Sep 17 03:25 PM

Page Number : 1
Vial Number : 14
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH

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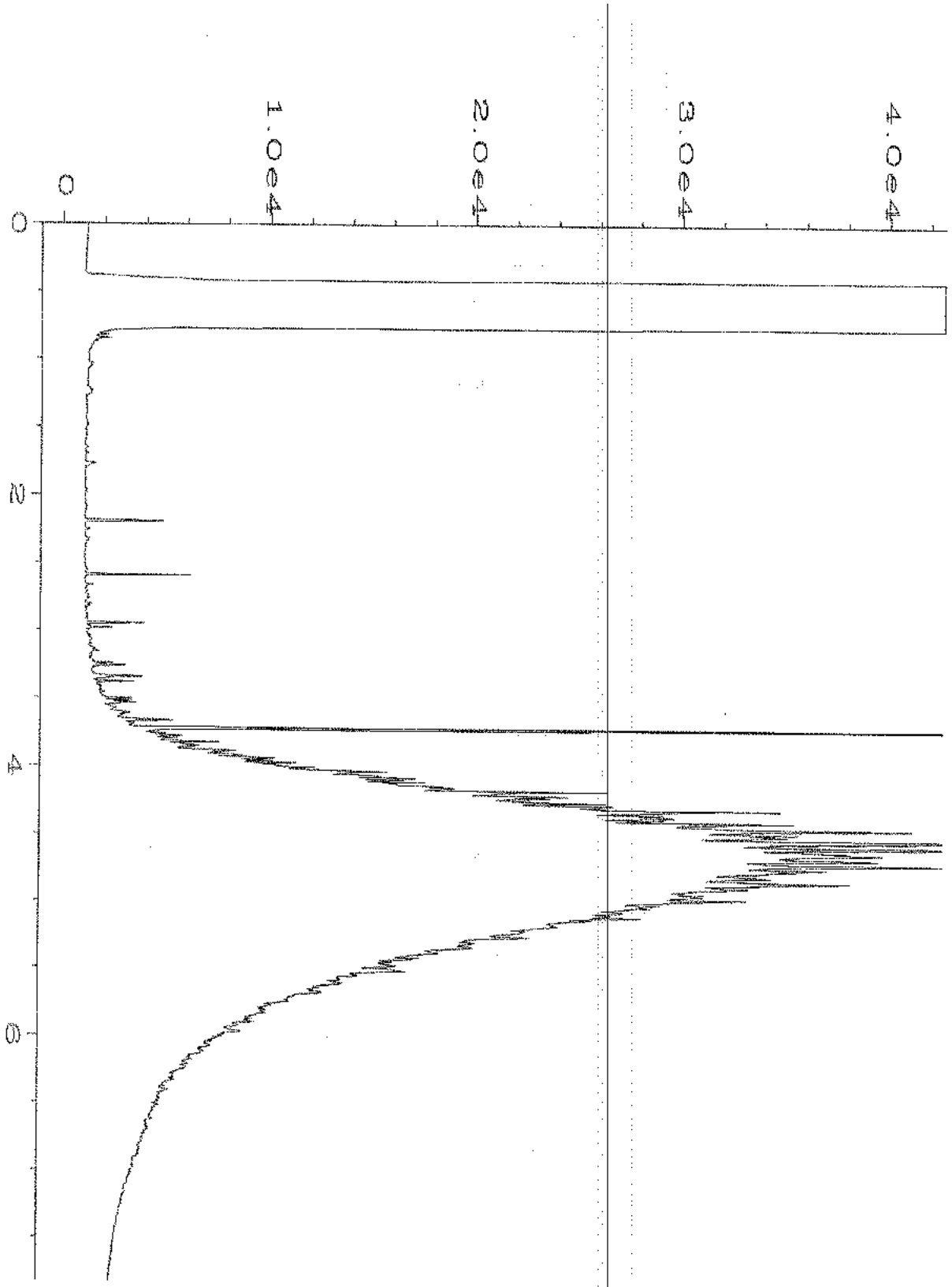
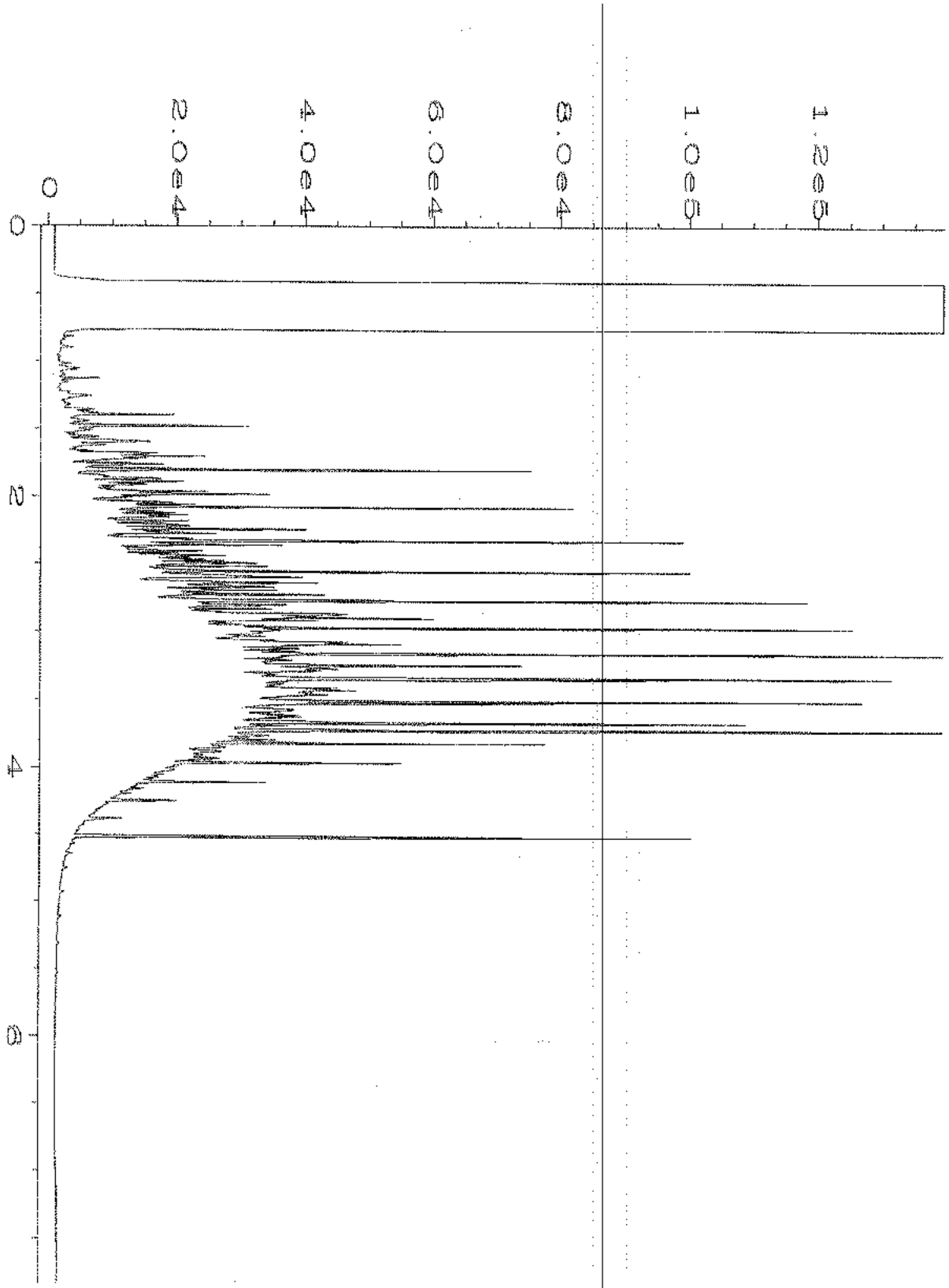
|---|---|---|---|
| Data File Name | : C:\HPCHEM\4\DATA\09-18-17\006F0301.D | | |
| Operator | : mwdl | Page Number | : 1 |
| Instrument | : GC#4 | Vial Number | : 6 |
| Sample Name | : 07-2034 mb | Injection Number | : 1 |
| Run Time Bar Code: | | Sequence Line | : 3 |
| Acquired on | : 18 Sep 17 08:52 AM | Instrument Method | : DX.MTH |
| Report Created on | : 22 Sep 17 03:24 PM | Analysis Method | : DX.MTH |




Data File Name : C:\HPCHEM\4\DATA\09-18-17\002F0201.D
Operator : mwdl
Instrument : GC#4
Sample Name : 500 MO 50-142B
Run Time Bar Code:
Acquired on : 18 Sep 17 05:44 AM
Report Created on: 22 Sep 17 03:24 PM

Page Number : 1
Vial Number : 2
Injection Number : 1
Sequence Line : 2
Instrument Method: DX.MTH
Analysis Method : DX.MTH




Data File Name : C:\HPCHEM\4\DATA\09-18-17\003F0201.D
Operator : mwdl
Instrument : GC#4
Sample Name : 500 Dx 49-188E
Run Time Bar Code:
Acquired on : 18 Sep 17 06:05 AM
Report Created on: 22 Sep 17 03:24 PM

Page Number : 1
Vial Number : 3
Injection Number : 1
Sequence Line : 2
Instrument Method: DX.MTH
Analysis Method : DX.MTH

709262

# SAMPLE CHAIN OF CUSTODY

ME 09/15/17 VSI / BTL

Page # _____ of _____

Report To DREW Z. & TOM COLLEAN
Company AVENUE 55
Address 600 UNIVERSITY ST. # 2305
City, State, ZIP SEATTLE, WA 98101
Phone 206-707-9696 Email DZABOROWSKI@AVENUE55.NET

SAMPLERS (*signature*)

PROJECT NAME: AVENUE 55

PO #

REMARKS

INVOICE TO: AVE. 55

TURNAROUND TIME
☐ Standard Turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D ~~SIM~~ | PAHs 8270D SIM | ARSENIC/LEAD | CADMIUM | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-28 - 9/14 B.3' | 01A-E | 9/14 | 1:24 | SOIL | | X | X | | X | | X | X | X | | | | |
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| | | | | | | | | | | | | | | | | | Samples received at 4 °C |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE. 55 | 9/14 | 1:24 |
| Received by: | Nhan Phan | FEBI | 9/15/17 | 15:30 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

DRAFT

Date of Report: 09/13/17
Date Received: 09/12/17
Project: Avenue 55, F&BI 709185
Date Extracted: 09/13/17
Date Analyzed: 09/13/17

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

| Sample ID<br>Laboratory ID | Gasoline | Diesel | Heavy Oil | Surrogate (% Recovery)<br>(Limit 53-144) |
|---|---|---|---|---|
| SP-19 (9/8 B Roose)<br>709185-01 | ND | ND | ND | 79 |
| SP-20 (9/8 H Roose)<br>709185-02 | ND | ND | ND | 77 |
| Method Blank<br>07-2007 MB | ND | ND | ND | 77 |

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

DRAFT

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-19 (9/8 B Roose) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 709185-01 |
| Date Analyzed: | 09/13/17 | Data File: | 091317.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 62 | 142 |
| Toluene-d8 | 99 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

DRAFT

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-20 (9/8 H Roose) | Client: | Floyd-Snider |
| Date Received: | 09/12/17 | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 709185-02 |
| Date Analyzed: | 09/13/17 | Data File: | 091318.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

DRAFT

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Avenue 55, F&BI 709185 |
| Date Extracted: | 09/13/17 | Lab ID: | 07-1919 mb |
| Date Analyzed: | 09/13/17 | Data File: | 091308.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 62 | 142 |
| Toluene-d8 | 100 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.025 |
| Vinyl chloride | <0.05 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.05 |
| Chloroethane | <0.5 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.05 |
| Acetone | <0.5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.05 | m,p-Xylene | <0.1 |
| Hexane | <0.25 | o-Xylene | <0.05 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.05 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.05 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.05 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.05 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <0.5 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.05 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.03 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.02 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <0.5 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.05 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

709785

# SAMPLE CHAIN OF CUSTODY

ME 09-12-17 VSI

Page 1 of 1 BOL

Report To DREW Z. & TOM COLLIGAN

Company AVENUE 55

Address 600 UNIVERSITY ST. # 2305

City, State, ZIP SEATTLE, WA 98101

Phone 206-707-9696 Email DZABOROWSKI@AVENUE55.NET

SAMPLERS (*signature*)

PROJECT NAME: AVENUE 55

PO #:

REMARKS:

INVOICE TO: AVE. 55

**TURNAROUND TIME**
- ☐ Standard Turnaround
- ☒ RUSH 24 HR
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | ~~PAHs 8270D SIM~~ | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-19 (9/8-B-ROOSE) | 01A-F | 9/8 | 2:57 | SOIL | | X | X | X | X | X | | | | | | | |
| SP-20 (9/8 H-ROOSE) | 021 | 9/8 | 3:05 | SOIL | | X | X | X | X | X | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | Samples received at 4 °C |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | DREW ZABOROWSKI | AVE. 55 | 9/12 | 3:08 |
| Received by: | V I W H | FBI | 9/12 | 3:08 pm |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 28, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on August 22, 2017 from the Taylor WA, F&BI 708403 project. There are 19 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: Drew Zabrowski
FDS0828R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 22, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor WA, F&BI 708403 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 708403 -01 | SP-6 |
| 708403 -02 | SP-7 |
| 708403 -03 | SP-8 |

All quality control requirements were acceptable.

Date of Report: 08/28/17
Date Received: 08/22/17
Project: Taylor WA, F&BI 708403
Date Extracted: 08/23/17
Date Analyzed: 08/23/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SP-6<br>708403-01 | <50 | <250 | 106 |
| SP-7<br>708403-02 | <50 | <250 | 102 |
| SP-8<br>708403-03 | <50 | <250 | 101 |
| Method Blank<br>07-1826 MB | <50 | <250 | 118 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-6 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-01 |
| Date Analyzed: | 08/23/17 | Data File: | 708403-01.038 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.89 |
| Lead | 1.80 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-7 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-02 |
| Date Analyzed: | 08/23/17 | Data File: | 708403-02.039 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.00 |
| Lead | 2.08 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-8 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-03 |
| Date Analyzed: | 08/23/17 | Data File: | 708403-03.040 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.85 |
| Lead | 2.19 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | I7-449 mb |
| Date Analyzed: | 08/23/17 | Data File: | I7-449 mb.036 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-6 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-01 |
| Date Analyzed: | 08/23/17 | Data File: | 082308.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-7 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-02 |
| Date Analyzed: | 08/23/17 | Data File: | 082309.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 102 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-8 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-03 |
| Date Analyzed: | 08/23/17 | Data File: | 082310.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 102 | 55 | 145 |
| 4-Bromofluorobenzene | 103 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 07-1803 mb |
| Date Analyzed: | 08/23/17 | Data File: | 082306.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 102 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-6 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-01 1/5 |
| Date Analyzed: | 08/23/17 | Data File: | 082305.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 97 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-7 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-02 1/5 |
| Date Analyzed: | 08/23/17 | Data File: | 082306.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 92 | 31 | 163 |
| Benzo(a)anthracene-d12 | 97 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-8 | Client: | Floyd-Snider |
| Date Received: | 08/22/17 | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 708403-03 1/5 |
| Date Analyzed: | 08/23/17 | Data File: | 082307.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 101 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor WA, F&BI 708403 |
| Date Extracted: | 08/23/17 | Lab ID: | 07-1825 mb 1/5 |
| Date Analyzed: | 08/23/17 | Data File: | 082304.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 76 | 31 | 163 |
| Benzo(a)anthracene-d12 | 81 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

Date of Report: 08/28/17
Date Received: 08/22/17
Project: Taylor WA, F&BI 708403

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 708403-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 90 | 90 | 73-135 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 92 | 74-139 |

Date of Report: 08/28/17
Date Received: 08/22/17
Project: Taylor WA, F&BI 708403

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: 708330-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 5.34 | 110 | 110 | 75-125 | 0 |
| Lead | mg/kg (ppm) | 50 | 1.68 | 104 | 103 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 105 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 107 | 80-120 |

Date of Report: 08/28/17
Date Received: 08/22/17
Project: Taylor WA, F&BI 708403

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

Laboratory Code: 708401-20 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 47 | 47 | 10-138 | 0 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 59 | 58 | 10-176 | 2 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 69 | 70 | 10-160 | 1 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 85 | 83 | 10-156 | 2 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 75 | 75 | 14-137 | 0 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 83 | 82 | 19-140 | 1 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 84 | 84 | 25-135 | 0 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 85 | 83 | 12-160 | 2 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 84 | 82 | 10-156 | 2 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 84 | 83 | 21-139 | 1 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 79 | 80 | 20-133 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | 75 | 22-139 |
| Chloroethane | mg/kg (ppm) | 2.5 | 83 | 10-163 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 96 | 47-128 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 105 | 42-132 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 101 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 103 | 68-115 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 103 | 72-113 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 102 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 106 | 62-131 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 103 | 64-117 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 98 | 72-114 |

Date of Report: 08/28/17
Date Received: 08/22/17
Project: Taylor WA, F&BI 708403

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 708403-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 98 | 100 | 23-144 | 2 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 95 | 95 | 32-149 | 0 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 94 | 98 | 23-176 | 4 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 100 | 97 | 42-139 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 89 | 89 | 21-163 | 0 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 81 | 23-170 | 4 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 78 | 31-146 | 5 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 101 | 51-115 |
| Chrysene | mg/kg (ppm) | 0.17 | 100 | 55-129 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 102 | 56-123 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 100 | 54-131 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 88 | 51-118 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 88 | 49-148 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 89 | 50-141 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

708403

# SAMPLE CHAIN OF CUSTODY

MG 8-22-17

# BI / V1

Page # 1 of 1

Report To Tom Colligan

Company FLOYD SNIDER

Address seattle WA

City, State, ZIP

Phone Email

SAMPLERS (signature) Tom Colligan

PROJECT NAME TAYLOR WA

PO #

REMARKS Sampled at FLOYDSNIDER LAB

INVOICE TO Drew Zab. AVE 55

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 24 hr
- Rush charges authorized by: TC

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | cPAH 8270D SIM PAH's 8270D SIM | Arsenic, Lead | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-6 | 01A-E | 8/22 | 1:15 | Soil | 5 | | + | | | X | | X | X | | | | |
| SP-7 | 02 | " | 1:16 | " | 5 | | X | | | X | | X | X | | | | |
| SP-8 | 03 | " | 1:17 | " | 5 | | X | | | X | | X | X | | | | |

Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Spencer Holcomb | Avenue 55 | 08/22/17 | 5:10pm |
| Received by: | Eric Monroe | FSS | 8/22/17 | 1710 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 23, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on August 16, 2017 from the Taylor WA, PO Ave 55-Taylor Way, F&BI 708316 project. There are 13 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: dzaborowski@avenue55.net
FDS0823R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 16, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor WA, PO Ave 55-Taylor Way, F&BI 708316 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 708316 -01 | SP-5 |

All quality control requirements were acceptable.

Date of Report: 08/23/17
Date Received: 08/16/17
Project: Taylor WA, PO Ave 55-Taylor Way, F&BI 708316
Date Extracted: 08/17/17
Date Analyzed: 08/17/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 53-144) |
|---|---|---|---|
| SP-5<br>708316-01 | <50 | <250 | 102 |
| Method Blank<br>07-1786 MB | <50 | <250 | 90 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-5 | Client: | Floyd-Snider |
| Date Received: | 08/16/17 | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/17/17 | Lab ID: | 708316-01 |
| Date Analyzed: | 08/17/17 | Data File: | 708316-01.049 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.47 |
| Lead | 1.98 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/17/17 | Lab ID: | I7-437 mb2 |
| Date Analyzed: | 08/17/17 | Data File: | I7-437 mb2.048 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-5 | Client: | Floyd-Snider |
| Date Received: | 08/16/17 | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/17/17 | Lab ID: | 708316-01 1/5 |
| Date Analyzed: | 08/17/17 | Data File: | 081705.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 83 | 31 | 163 |
| Benzo(a)anthracene-d12 | 84 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/17/17 | Lab ID: | 07-1785 mb 1/5 |
| Date Analyzed: | 08/17/17 | Data File: | 081704.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 84 | 31 | 163 |
| Benzo(a)anthracene-d12 | 85 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-5 | Client: | Floyd-Snider |
| Date Received: | 08/16/17 | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/18/17 | Lab ID: | 708316-01 |
| Date Analyzed: | 08/18/17 | Data File: | 081812.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 100 | 55 | 145 |
| 4-Bromofluorobenzene | 99 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor WA, PO Ave 55-Taylor Way |
| Date Extracted: | 08/18/17 | Lab ID: | 07-1791 mb |
| Date Analyzed: | 08/18/17 | Data File: | 081806.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 100 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

Date of Report: 08/23/17
Date Received: 08/16/17
Project: Taylor WA, PO Ave 55-Taylor Way, F&BI 708316

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 708316-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 104 | 102 | 64-133 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 102 | 58-147 |

Date of Report: 08/23/17
Date Received: 08/16/17
Project: Taylor WA, PO Ave 55-Taylor Way, F&BI 708316

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 98 | 96 | 80-120 | 2 |
| Lead | mg/kg (ppm) | 50 | 97 | 95 | 80-120 | 2 |

Date of Report: 08/23/17
Date Received: 08/16/17
Project: Taylor WA, PO Ave 55-Taylor Way, F&BI 708316

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

Laboratory Code: 708337-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 50 | 52 | 10-138 | 4 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 62 | 65 | 10-176 | 5 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 71 | 77 | 10-160 | 8 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 89 | 96 | 10-156 | 8 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 77 | 82 | 14-137 | 6 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 84 | 90 | 19-140 | 7 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 85 | 89 | 25-135 | 5 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 85 | 90 | 12-160 | 6 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 85 | 90 | 10-156 | 6 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 83 | 89 | 21-139 | 7 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 82 | 86 | 20-133 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | 74 | 22-139 |
| Chloroethane | mg/kg (ppm) | 2.5 | 85 | 10-163 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 99 | 47-128 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 112 | 42-132 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 101 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 105 | 68-115 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 105 | 72-113 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 103 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 107 | 62-131 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 103 | 64-117 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 101 | 72-114 |

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 708316-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 95 | 98 | 23-144 | 3 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 97 | 98 | 32-149 | 1 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 105 | 102 | 23-176 | 3 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 109 | 103 | 42-139 | 6 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 85 | 21-163 | 1 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 72 | 85 | 23-170 | 17 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 77 | 91 | 31-146 | 17 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 96 | 51-115 |
| Chrysene | mg/kg (ppm) | 0.17 | 100 | 55-129 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 101 | 56-123 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 108 | 54-131 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 83 | 51-118 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 77 | 49-148 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 83 | 50-141 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

708316

# SAMPLE CHAIN OF CUSTODY

ME 08/16/17 AEP/BT

Page # ____ of ____

Send Report To Tom Colliga

Company Friedman Bruya

Address ____

City, State, ZIP ____

Phone # ____ Fax # ____

SAMPLERS (signature) Tom Colliga

PROJECT NAME/NO. Taylor WA

PO# AWS 50 - Taylor Way

REMARKS

TURNAROUND TIME
☐ Standard (2 Weeks)
☐ RUSH 48-hr
Rush charges authorized by ____

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

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of containers | ANALYSES REQUESTED: TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by8260 | SVOCs by 8270 | HFS | cPAH | Arsenic, Lead | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-5 | 708316-16 | | 11:49 | Soil | 4 | X | | | X | | | + | + | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | Samples received at 4 °C | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |


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: | Tom Colliga | Friedman Bruya | 8-16-17 | 6:30 pm |
| Received by: | Joe Shimura | FBT | " | " |
| Relinquished by: | | | | |
| Received by: | | | | |

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 29, 2017

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on August 23, 2017 from the Taylor Way, F&BI 708432 project. There are 25 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: Drew Zabrowski
FDS0829R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 23, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor Way, F&BI 708432 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 708432 -01 | SP-9 |
| 708432 -02 | SP-10 |
| 708432 -03 | SP-11 |
| 708432 -04 | SP-12 |
| 708432 -05 | SP-13 |

All quality control requirements were acceptable.

Date of Report: 08/29/17
Date Received: 08/23/17
Project: Taylor Way, F&BI 708432
Date Extracted: 08/24/17
Date Analyzed: 08/24/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 53-144) |
|---|---|---|---|
| SP-9<br>708432-01 | <50 | <250 | 92 |
| SP-10<br>708432-02 | <50 | <250 | 90 |
| SP-11<br>708432-03 | <50 | <250 | 92 |
| SP-12<br>708432-04 | <50 | <250 | 106 |
| SP-13<br>708432-05 | <50 | <250 | 102 |
| Method Blank<br>07-1829 MB2 | <50 | <250 | 93 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-9 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-01 |
| Date Analyzed: | 08/24/17 | Data File: | 708432-01.120 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.26 |
| Lead | 1.43 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-10 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-02 |
| Date Analyzed: | 08/24/17 | Data File: | 708432-02.043 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.27 |
| Lead | 1.27 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-11 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-03 |
| Date Analyzed: | 08/24/17 | Data File: | 708432-03.045 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.34 |
| Lead | 1.32 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-12 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-04 |
| Date Analyzed: | 08/24/17 | Data File: | 708432-04.046 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.31 |
| Lead | 1.38 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | SP-13 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-05 |
| Date Analyzed: | 08/24/17 | Data File: | 708432-05.047 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.55 |
| Lead | 1.44 |

## Analysis For Total Metals By EPA Method 6020A

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | NA | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | I7-451 mb |
| Date Analyzed: | 08/24/17 | Data File: | I7-451 mb.109 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | AP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Lead | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-9 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-01 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082405.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 98 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-10 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-02 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082406.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 95 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-11 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-03 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082407.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 88 | 31 | 163 |
| Benzo(a)anthracene-d12 | 92 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-12 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-04 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082408.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 90 | 31 | 163 |
| Benzo(a)anthracene-d12 | 97 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-13 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-05 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082409.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 85 | 31 | 163 |
| Benzo(a)anthracene-d12 | 94 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270D SIM

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 07-1825 mb2 1/5 |
| Date Analyzed: | 08/24/17 | Data File: | 082403.D |
| Matrix: | Soil | Instrument: | GCMS6 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Anthracene-d10 | 89 | 31 | 163 |
| Benzo(a)anthracene-d12 | 91 | 24 | 168 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-9 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-01 |
| Date Analyzed: | 08/24/17 | Data File: | 082426.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-10 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-02 |
| Date Analyzed: | 08/24/17 | Data File: | 082427.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 103 | 55 | 145 |
| 4-Bromofluorobenzene | 101 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-11 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-03 |
| Date Analyzed: | 08/24/17 | Data File: | 082428.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-12 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-04 |
| Date Analyzed: | 08/24/17 | Data File: | 082429.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 102 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | SP-13 | Client: | Floyd-Snider |
| Date Received: | 08/23/17 | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 708432-05 |
| Date Analyzed: | 08/24/17 | Data File: | 082430.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 62 | 142 |
| Toluene-d8 | 101 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way, F&BI 708432 |
| Date Extracted: | 08/24/17 | Lab ID: | 07-1805 mb |
| Date Analyzed: | 08/24/17 | Data File: | 082407.D |
| Matrix: | Soil | Instrument: | GCMS4 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 62 | 142 |
| Toluene-d8 | 102 | 55 | 145 |
| 4-Bromofluorobenzene | 102 | 65 | 139 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Vinyl chloride | <0.05 |
| Chloroethane | <0.5 |
| 1,1-Dichloroethene | <0.05 |
| Methylene chloride | <0.5 |
| trans-1,2-Dichloroethene | <0.05 |
| 1,1-Dichloroethane | <0.05 |
| cis-1,2-Dichloroethene | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.05 |
| 1,1,1-Trichloroethane | <0.05 |
| Trichloroethene | <0.02 |
| Tetrachloroethene | <0.025 |

Date of Report: 08/29/17
Date Received: 08/23/17
Project: Taylor Way, F&BI 708432

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 708419-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 3,600 | 57 b | 93 b | 73-135 | 48 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 88 | 74-139 |

Date of Report: 08/29/17
Date Received: 08/23/17
Project: Taylor Way, F&BI 708432

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020A

Laboratory Code: 708432-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 1.13 | 102 | 102 | 75-125 | 0 |
| Lead | mg/kg (ppm) | 50 | 1.28 | 100 | 99 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 103 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 102 | 80-120 |

Date of Report: 08/29/17
Date Received: 08/23/17
Project: Taylor Way, F&BI 708432

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 708403-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 98 | 100 | 23-144 | 2 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.01 | 95 | 95 | 32-149 | 0 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 94 | 98 | 23-176 | 4 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.01 | 100 | 97 | 42-139 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 89 | 89 | 21-163 | 0 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.01 | 84 | 81 | 23-170 | 4 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.01 | 82 | 78 | 31-146 | 5 |

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 101 | 51-115 |
| Chrysene | mg/kg (ppm) | 0.17 | 100 | 55-129 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 102 | 56-123 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 100 | 54-131 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 88 | 51-118 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 88 | 49-148 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 89 | 50-141 |

Date of Report: 08/29/17
Date Received: 08/23/17
Project: Taylor Way, F&BI 708432

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

Laboratory Code: 708432-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | <0.05 | 55 | 54 | 10-138 | 2 |
| Chloroethane | mg/kg (ppm) | 2.5 | <0.5 | 63 | 61 | 10-176 | 3 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 76 | 76 | 10-160 | 0 |
| Methylene chloride | mg/kg (ppm) | 2.5 | <0.5 | 94 | 92 | 10-156 | 2 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 83 | 83 | 14-137 | 0 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 90 | 89 | 19-140 | 1 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | <0.05 | 90 | 90 | 25-135 | 0 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | <0.05 | 89 | 89 | 12-160 | 0 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | <0.05 | 90 | 88 | 10-156 | 2 |
| Trichloroethene | mg/kg (ppm) | 2.5 | <0.02 | 88 | 87 | 21-139 | 1 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | <0.025 | 86 | 83 | 20-133 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Vinyl chloride | mg/kg (ppm) | 2.5 | 81 | 22-139 |
| Chloroethane | mg/kg (ppm) | 2.5 | 87 | 10-163 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2.5 | 103 | 47-128 |
| Methylene chloride | mg/kg (ppm) | 2.5 | 111 | 42-132 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 105 | 67-127 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2.5 | 110 | 68-115 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2.5 | 108 | 72-113 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2.5 | 106 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2.5 | 110 | 62-131 |
| Trichloroethene | mg/kg (ppm) | 2.5 | 106 | 64-117 |
| Tetrachloroethene | mg/kg (ppm) | 2.5 | 103 | 72-114 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

708432

# SAMPLE CHAIN OF CUSTODY

ME 08-23-17 ATB AT

Page # ____ of ____

Report To Tom Colligan
Company Floyd / Snider
Address 601 Union St Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email Tom.colligan@FloydSnider.com

SAMPLERS (*signature*)

PROJECT NAME: Taylor Way

PO #

REMARKS

INVOICE TO: Drew Zaborski, Avenue 55

TURNAROUND TIME
☐ Standard Turnaround
RUSH 48
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | TPH-HCID | TPH-Diesel | TPH-Gasoline | BTEX by 8021B | VOCs by 8260C | SVOCs by 8270D | SIM PAHs 8270D SIM | Arsenic (total) | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| SP-9 | 01 A-E | 8/23/17 | 1:26 | Soil | 5 | | X | | | X | | X | X | | | | |
| SP-10 | 02 | " | 1:22 | " | 5 | | X | | | X | | X | X | | | | |
| SP-11 | 03 | " | 1:24 | " | 5 | | X | | | X | | X | X | | | | |
| SP-12 | 04 | " | 1:25 | " | 5 | | X | | | X | | X | X | | | | |
| SP-13 | 05 | " | 1:27 | " | 5 | | X | | | X | | X | X | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | Samples received at 4 °C |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Spencer Holcomb | Avenue 55 | 8/23/17 | 3:20pm |
| Received by: | DOD | FOBI | 8-23-17 | 3:20 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

**SPECTRA Laboratories** ...Where experience matters

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-30 Tank 2
Sample Matrix: Wastewater
Date Sampled: 11/30/2017
Date Received: 11/30/2017
Spectra Project: 2017110867
Spectra Number: 1
Rush

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| HEM-SGT in Water | <5.0 | mg/L | EPA 1664-B | 1,2-Dichloroethane | <1 | µg/L | EPA 624 |
| Arsenic | < 0.05 | mg/L | EPA 200.7 | 1,2-Dichloropropane | <1 | µg/L | EPA 624 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 | 1,3-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Chromium | 0.010 | mg/L | EPA 200.7 | 1,4-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Copper | 0.015 | mg/L | EPA 200.7 | 2-Chloroethylvinyl Ether | <10 | µg/L | EPA 624 |
| Lead | < 0.04 | mg/L | EPA 200.7 | Acrolein | <10 | µg/L | EPA 624 |
| Molybdenum | < 0.01 | mg/L | EPA 200.7 | Acrylonitrile | <10 | µg/L | EPA 624 |
| Nickel | 0.031 | mg/L | EPA 200.7 | Benzene | <1 | µg/L | EPA 624 |
| Selenium | < 0.05 | mg/L | EPA 200.7 | Bromodichloromethane | <1 | µg/L | EPA 624 |
| Silver | < 0.007 | mg/L | EPA 200.7 | Bromoform | <1 | µg/L | EPA 624 |
| Zinc | 0.090 | mg/L | EPA 200.7 | Carbon Tetrachloride | <1 | µg/L | EPA 624 |
| Mercury | <0.0005 | mg/L | EPA 245.1 | Chlorobenzene | <1 | µg/L | EPA 624 |
| 1,1,1-Trichloroethane | <1 | µg/L | EPA 624 | Chlorodibromomethane | <1 | µg/L | EPA 624 |
| 1,1,2,2-Tetrachloroethane | <1 | µg/L | EPA 624 | Chloroethane | <1 | µg/L | EPA 624 |
| 1,1,2-Trichloroethane | <1 | µg/L | EPA 624 | Chloroform | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethane | <1 | µg/L | EPA 624 | Chloromethane | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethene | <1 | µg/L | EPA 624 | Ethylbenzene | <1 | µg/L | EPA 624 |
| 1,2,4-Trichlorobenzene | <1 | µg/L | EPA 624 | Hexachlorobutadiene | <1 | µg/L | EPA 624 |
| 1,2-Dichlorobenzene | <1 | µg/L | EPA 624 | Methyl bromide | <1 | µg/L | EPA 624 |

*Surrogate was above limits due to a co-elution in the chromatogram. Since all results are below the reporting limit the results reported are not affected.

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 120 | EPA 624 |
| 1,2-Dichloroethane-d4 | 130 | EPA 624 |
| Toluene-d8 | 95 | EPA 624 |
| 4-Bromofluorobenzene | 192* | EPA 624 |
| 2-Fluorophenol | 63 | EPA 625 |
| Phenol-d6 | 66 | EPA 625 |
| Nitrobenzene-d5 | 65 | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 64 | EPA 625 |
| 2,4,6-Tribromophenol | 79 | EPA 625 |
| p-Terphenyl-d14 | 73 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a14cxsur/mkw

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

| | |
|---|---|
| P.O.#: | 11714 |
| Project: | Portside 55 North |
| Client ID: | 11-30 Tank 2 |
| Sample Matrix: | Wastewater |
| Date Sampled: | 11/30/2017 |
| Date Received: | 11/30/2017 |
| Spectra Project: | 2017110867 |
| Spectra Number: | 1 |
| | Rush |

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| Methylene chloride | <5 | µg/L | EPA 624 | 2,4-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1 | µg/L | EPA 624 | 2,6-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| Tetrachloroethene | <1 | µg/L | EPA 624 | 2-Chloronaphthalene | <2.5 | µg/L | EPA 625 |
| Toluene | <1 | µg/L | EPA 624 | 2-Chlorophenol | <2.5 | µg/L | EPA 625 |
| Total Xylenes | <2 | µg/L | EPA 624 | 2-Nitrophenol | <2.5 | µg/L | EPA 625 |
| Trichloroethene | <1 | µg/L | EPA 624 | 3,3-Dichlorobenzidine | <20 | µg/L | EPA 625 |
| Vinyl chloride | <1 | µg/L | EPA 624 | 4,6-Dinitro-2-Methylphenol | <10 | µg/L | EPA 625 |
| cis-1,3-Dichloropropene | <1 | µg/L | EPA 624 | 4-Bromophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| trans-1,2-Dichloroethene | <1 | µg/L | EPA 624 | 4-Chloro-3-Methylphenol | <2.5 | µg/L | EPA 625 |
| trans-1,3-Dichloropropene | <1 | µg/L | EPA 624 | 4-Chlorophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 1,2 diphenylhydrazine | <2.5 | µg/L | EPA 625 | 4-Nitrophenol | <2.5 | µg/L | EPA 625 |
| 1,2,4-Trichlorobenzene | <2.5 | µg/L | EPA 625 | Acenaphthene | <1.0 | µg/L | EPA 625 |
| 1,2-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Acenaphthylene | <1.0 | µg/L | EPA 625 |
| 1,3-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Anthracene | <1.0 | µg/L | EPA 625 |
| 1,4-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Benzidine | <20 | µg/L | EPA 625 |
| 2,4,6-Trichlorophenol | <2.5 | µg/L | EPA 625 | Benzo(a)Anthracene | <1.0 | µg/L | EPA 625 |
| 2,4-Dichlorophenol | <2.5 | µg/L | EPA 625 | Benzo(a)Pyrene | <1.0 | µg/L | EPA 625 |
| 2,4-Dimethylphenol | <2.5 | µg/L | EPA 625 | Benzo(b)Fluoranthene | <1.0 | µg/L | EPA 625 |
| 2,4-Dinitrophenol | <10 | µg/L | EPA 625 | Benzo(ghi)Perylene | <1.0 | µg/L | EPA 625 |

*Surrogate was above limits due to a co-elution in the chromatogram. Since all results are below the reporting limit the results reported are not affected.

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 120 | EPA 624 |
| 1,2-Dichloroethane-d4 | 130 | EPA 624 |
| Toluene-d8 | 95 | EPA 624 |
| 4-Bromofluorobenzene | 192* | EPA 624 |
| 2-Fluorophenol | 63 | EPA 625 |
| Phenol-d6 | 66 | EPA 625 |
| Nitrobenzene-d5 | 65 | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 64 | EPA 625 |
| 2,4,6-Tribromophenol | 79 | EPA 625 |
| p-Terphenyl-d14 | 73 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

a14exsur/mkw

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-30 Tank 2
Sample Matrix: Wastewater
Date Sampled: 11/30/2017
Date Received: 11/30/2017
Spectra Project: 2017110867
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| Benzo(k)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Bis(2-Chloroethyl)Ether | <2.5 | µg/L | EPA 625 |
| Butylbenzylphthalate | <2.5 | µg/L | EPA 625 |
| Chrysene | <2.5 | µg/L | EPA 625 |
| Di-n-Butylphthalate | 26.2 | µg/L | EPA 625 |
| Di-n-Octyl Phthalate | <2.5 | µg/L | EPA 625 |
| Dibenzo(a,h)Anthracene | <2.5 | µg/L | EPA 625 |
| Diethylphthalate | <2.5 | µg/L | EPA 625 |
| Dimethyl Phthalate | <2.5 | µg/L | EPA 625 |
| Fluoranthene | <1.0 | µg/L | EPA 625 |
| Fluorene | <1.0 | µg/L | EPA 625 |
| Hexachlorobenzene | <2.5 | µg/L | EPA 625 |
| Hexachlorobutadiene | <2.5 | µg/L | EPA 625 |
| Hexachlorocyclopentadiene | <2.5 | µg/L | EPA 625 |
| Hexachloroethane | <2.5 | µg/L | EPA 625 |
| Indeno(1,2,3-cd)Pyrene | <1.0 | µg/L | EPA 625 |
| Isophorone | <2.5 | µg/L | EPA 625 |
| N-Nitroso-Di-n-Propylamine | <2.5 | µg/L | EPA 625 |
| N-Nitrosodiphenylamine | <2.5 | µg/L | EPA 625 |
| N-nitrosodimethylamine | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1.0 | µg/L | EPA 625 |
| Nitrobenzene | <2.5 | µg/L | EPA 625 |
| Pentachlorophenol | <2.5 | µg/L | EPA 625 |
| Phenanthrene | <1.0 | µg/L | EPA 625 |
| Phenol | <2.5 | µg/L | EPA 625 |
| Pyrene | <1.0 | µg/L | EPA 625 |
| bis(2-Chloroethoxy)Methane | <2.5 | µg/L | EPA 625 |
| bis(2-Ethylhexyl)Phthalate | 3.7 | µg/L | EPA 625 |
| bis(2-chloroisopropyl)Ether | <2.5 | µg/L | EPA 625 |
| Total Suspended Solids | 260 | mg/L | SM 2540 D |
| Total Cyanide | <0.01 | mg/L | SM 4500-$CN^-$ E |
| pH | 7.04 | pH | SM 4500-H+ B |
| Hexavalent Chromium | <0.01 | mg/L | SW846 7196A |

*Surrogate was above limits due to a co-elution in the chromatogram. Since all results are below the reporting limit the results reported are not affected.

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 120 | EPA 624 |
| 1,2-Dichloroethane-d4 | 130 | EPA 624 |
| Toluene-d8 | 95 | EPA 624 |
| 4-Bromofluorobenzene | 192* | EPA 624 |
| 2-Fluorophenol | 63 | EPA 625 |
| Phenol-d6 | 66 | EPA 625 |
| Nitrobenzene-d5 | 65 | EPA 625 |
| 2-Fluorobiphenyl | 64 | EPA 625 |
| 2,4,6-Tribromophenol | 79 | EPA 625 |
| p-Terphenyl-d14 | 73 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

14exsur/mkw

**SPECTRA Laboratories**
2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**
Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # W1711084

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction ADDRESS: ADDRESS CHANGE ☐

PROJECT: Portside 55 North

CONTACT: Jason Nix

SAMPLED BY: JASON NEX

PHONE: 206-406-7979 FAX:

e-MAIL: X2 SEE BELOW Prefer FAX ☐ or e-MAIL ☐

PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TTO - Both 624 & 625 | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11-30 Tank 2 | 11/30 | | WW | 9 | | | | | | X | | | | | | | X | | X | X | | | X | | | | | X | X | X* | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | JASON A. NEX | SIERRA | 11 30 | 3:00D |
| RECEIVED BY | | Kaitlyn Reilly | Spectra | 11-30-17 | 15:02 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

EMAIL TO BOTH -
BRYANP@SIERRAIND.COM &
JASONN@SIERRAIND.COM

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-30 Tank 3
Sample Matrix: Wastewater
Date Sampled: 11/30/2017
Date Received: 11/30/2017
Spectra Project: 2017110868
Spectra Number: 1
Rush

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| HEM-SGT in Water | <5.0 | mg/L | EPA 1664-B | 1,2-Dichloroethane | <1 | µg/L | EPA 624 |
| Arsenic | < 0.05 | mg/L | EPA 200.7 | 1,2-Dichloropropane | <1 | µg/L | EPA 624 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 | 1,3-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Chromium | 0.050 | mg/L | EPA 200.7 | 1,4-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Copper | 0.088 | mg/L | EPA 200.7 | 2-Chloroethylvinyl Ether | <10 | µg/L | EPA 624 |
| Lead | < 0.04 | mg/L | EPA 200.7 | Acrolein | <10 | µg/L | EPA 624 |
| Molybdenum | < 0.01 | mg/L | EPA 200.7 | Acrylonitrile | <10 | µg/L | EPA 624 |
| Nickel | < 0.015 | mg/L | EPA 200.7 | Benzene | <1 | µg/L | EPA 624 |
| Selenium | < 0.05 | mg/L | EPA 200.7 | Bromodichloromethane | <1 | µg/L | EPA 624 |
| Silver | < 0.007 | mg/L | EPA 200.7 | Bromoform | <1 | µg/L | EPA 624 |
| Zinc | 0.058 | mg/L | EPA 200.7 | Carbon Tetrachloride | <1 | µg/L | EPA 624 |
| Mercury | <0.0005 | mg/L | EPA 245.1 | Chlorobenzene | <1 | µg/L | EPA 624 |
| 1,1,1-Trichloroethane | <1 | µg/L | EPA 624 | Chlorodibromomethane | <1 | µg/L | EPA 624 |
| 1,1,2,2-Tetrachloroethane | <1 | µg/L | EPA 624 | Chloroethane | <1 | µg/L | EPA 624 |
| 1,1,2-Trichloroethane | <1 | µg/L | EPA 624 | Chloroform | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethane | <1 | µg/L | EPA 624 | Chloromethane | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethene | <1 | µg/L | EPA 624 | Ethylbenzene | <1 | µg/L | EPA 624 |
| 1,2,4-Trichlorobenzene | <1 | µg/L | EPA 624 | Hexachlorobutadiene | <1 | µg/L | EPA 624 |
| 1,2-Dichlorobenzene | <1 | µg/L | EPA 624 | Methyl bromide | <1 | µg/L | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 122 | EPA 624 |
| 1,2-Dichloroethane-d4 | 133 | EPA 624 |
| Toluene-d8 | 94 | EPA 624 |
| 4-Bromofluorobenzene | 101 | EPA 624 |
| 2-Fluorophenol | 62 | EPA 625 |
| Phenol-d6 | 63 | EPA 625 |
| Nitrobenzene-d5 | 63 | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 62 | EPA 625 |
| 2,4,6-Tribromophenol | 71 | EPA 625 |
| p-Terphenyl-d14 | 68 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

a14exsur/jjb

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-30 Tank 3
Sample Matrix: Wastewater
Date Sampled: 11/30/2017
Date Received: 11/30/2017
Spectra Project: 2017110868
Spectra Number: 1
Rush

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| Methylene chloride | <5 | µg/L | EPA 624 | 2,4-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1 | µg/L | EPA 624 | 2,6-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| Tetrachloroethene | <1 | µg/L | EPA 624 | 2-Chloronaphthalene | <2.5 | µg/L | EPA 625 |
| Toluene | <1 | µg/L | EPA 624 | 2-Chlorophenol | <2.5 | µg/L | EPA 625 |
| Total Xylenes | <2 | µg/L | EPA 624 | 2-Nitrophenol | <2.5 | µg/L | EPA 625 |
| Trichloroethene | <1 | µg/L | EPA 624 | 3,3-Dichlorobenzidine | <20 | µg/L | EPA 625 |
| Vinyl chloride | <1 | µg/L | EPA 624 | 4,6-Dinitro-2-Methylphenol | <10 | µg/L | EPA 625 |
| cis-1,3-Dichloropropene | <1 | µg/L | EPA 624 | 4-Bromophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| trans-1,2-Dichloroethene | <1 | µg/L | EPA 624 | 4-Chloro-3-Methylphenol | <2.5 | µg/L | EPA 625 |
| trans-1,3-Dichloropropene | <1 | µg/L | EPA 624 | 4-Chlorophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 1,2 diphenylhydrazine | <2.5 | µg/L | EPA 625 | 4-Nitrophenol | <2.5 | µg/L | EPA 625 |
| 1,2,4-Trichlorobenzene | <2.5 | µg/L | EPA 625 | Acenaphthene | <1.0 | µg/L | EPA 625 |
| 1,2-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Acenaphthylene | <1.0 | µg/L | EPA 625 |
| 1,3-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Anthracene | <1.0 | µg/L | EPA 625 |
| 1,4-Dichlorobenzene | <2.5 | µg/L | EPA 625 | Benzidine | <20 | µg/L | EPA 625 |
| 2,4,6-Trichlorophenol | <2.5 | µg/L | EPA 625 | Benzo(a)Anthracene | <1.0 | µg/L | EPA 625 |
| 2,4-Dichlorophenol | <2.5 | µg/L | EPA 625 | Benzo(a)Pyrene | <1.0 | µg/L | EPA 625 |
| 2,4-Dimethylphenol | <2.5 | µg/L | EPA 625 | Benzo(b)Fluoranthene | <1.0 | µg/L | EPA 625 |
| 2,4-Dinitrophenol | <10 | µg/L | EPA 625 | Benzo(ghi)Perylene | <1.0 | µg/L | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 122 | EPA 624 |
| 1,2-Dichloroethane-d4 | 133 | EPA 624 |
| Toluene-d8 | 94 | EPA 624 |
| 4-Bromofluorobenzene | 101 | EPA 624 |
| 2-Fluorophenol | 62 | EPA 625 |
| Phenol-d6 | 63 | EPA 625 |
| Nitrobenzene-d5 | 63 | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 62 | EPA 625 |
| 2,4,6-Tribromophenol | 71 | EPA 625 |
| p-Terphenyl-d14 | 68 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

alex:sur/jjb

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12/01/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-30 Tank 3
Sample Matrix: Wastewater
Date Sampled: 11/30/2017
Date Received: 11/30/2017
Spectra Project: 2017110868
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| Benzo(k)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Bis(2-Chloroethyl)Ether | <2.5 | µg/L | EPA 625 |
| Butylbenzylphthalate | <2.5 | µg/L | EPA 625 |
| Chrysene | <1.0 | µg/L | EPA 625 |
| Di-n-Butylphthalate | <2.5 | µg/L | EPA 625 |
| Di-n-Octyl Phthalate | <2.5 | µg/L | EPA 625 |
| Dibenzo(a,h)Anthracene | <1.0 | µg/L | EPA 625 |
| Diethylphthalate | <2.5 | µg/L | EPA 625 |
| Dimethyl Phthalate | <2.5 | µg/L | EPA 625 |
| Fluoranthene | <1.0 | µg/L | EPA 625 |
| Fluorene | <1.0 | µg/L | EPA 625 |
| Hexachlorobenzene | <2.5 | µg/L | EPA 625 |
| Hexachlorobutadiene | <2.5 | µg/L | EPA 625 |
| Hexachlorocyclopentadiene | <2.5 | µg/L | EPA 625 |
| Hexachloroethane | <2.5 | µg/L | EPA 625 |
| Indeno(1,2,3-cd)Pyrene | <1.0 | µg/L | EPA 625 |
| Isophorone | <2.5 | µg/L | EPA 625 |
| N-Nitroso-Di-n-Propylamine | <2.5 | µg/L | EPA 625 |
| N-Nitrosodiphenylamine | <2.5 | µg/L | EPA 625 |
| N-nitrosodimethylamine | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1.0 | µg/L | EPA 625 |
| Nitrobenzene | <2.5 | µg/L | EPA 625 |
| Pentachlorophenol | <2.5 | µg/L | EPA 625 |
| Phenanthrene | <1.0 | µg/L | EPA 625 |
| Phenol | <2.5 | µg/L | EPA 625 |
| Pyrene | <2.5 | µg/L | EPA 625 |
| bis(2-Chloroethoxy)Methane | <2.5 | µg/L | EPA 625 |
| bis(2-Ethylhexyl)Phthalate | 4.5 | µg/L | EPA 625 |
| bis(2-chloroisopropyl)Ether | <2.5 | µg/L | EPA 625 |
| Total Suspended Solids | 130 | mg/L | SM 2540 D |
| Total Cyanide | <0.01 | mg/L | SM 4500-CN⁻ E |
| pH | 7.11 | pH | SM 4500-H+ B |
| Hexavalent Chromium | <0.01 | mg/L | SW846 7196A |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 122 | EPA 624 |
| 1,2-Dichloroethane-d4 | 133 | EPA 624 |
| Toluene-d8 | 94 | EPA 624 |
| 4-Bromofluorobenzene | 101 | EPA 624 |
| 2-Fluorophenol | 62 | EPA 625 |
| Phenol-d6 | 63 | EPA 625 |
| Nitrobenzene-d5 | 63 | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 62 | EPA 625 |
| 2,4,6-Tribromophenol | 71 | EPA 625 |
| p-Terphenyl-d14 | 68 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

1744exsur/jjb

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(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**
Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y__ N__ Page ____ of ____

# CHAIN of CUSTODY

SPECTRA PROJECT # 20171108&8

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction
ADDRESS:
ADDRESS CHANGE ☐

PROJECT: Portside 55 North
CONTACT: Jason Nix
SAMPLED BY: Jason Nix
PHONE: 206-406-7979 FAX:
e-MAIL: X2 SEE BELOW Prefer FAX ☐ or e-MAIL ☐
PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TTO - Both 624 & 625 | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11-30 Tank 3 | 11/30 | | WW | 9 | | | | | | X | | | | | | | | X | | X | X | | | X | | | | | | X | X | X* | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | Jason A. Nix | Sierra | 11 30 | 3:02P |
| RECEIVED BY | | Kaitlyn Reilly | Spectra | 11.30.17 | 15:02 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

EMAIL TO BOTH -
BRYANP@SIERRAIND.COM &
JASONN @ SIERRAIND.COM

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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12/21/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 12-20 Tank-1
Sample Matrix: Wastewater
Date Sampled: 12/20/2017
Date Received: 12/20/2017
Spectra Project: 2017120518
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| HEM-SGT in Water | <5.0 | mg/L | EPA 1664-B |
| Arsenic | < 0.05 | mg/L | EPA 200.7 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 |
| Chromium | < 0.007 | mg/L | EPA 200.7 |
| Copper | 0.073 | mg/L | EPA 200.7 |
| Lead | < 0.04 | mg/L | EPA 200.7 |
| Molybdenum | < 0.01 | mg/L | EPA 200.7 |
| Nickel | < 0.015 | mg/L | EPA 200.7 |
| Selenium | < 0.05 | mg/L | EPA 200.7 |

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Jeffrey Cooper, Laboratory Manager

a6/krd

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12/21/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

| | |
|---|---|
| P.O.#: | 11714 |
| Project: | Portside 55 North |
| Client ID: | 12-20 Tank-1 |
| Sample Matrix: | Wastewater |
| Date Sampled: | 12/20/2017 |
| Date Received: | 12/20/2017 |
| Spectra Project: | 2017120518 |
| Spectra Number: | 1 |
| | Rush |

| | | | |
|---|---|---|---|
| Silver | < 0.007 | mg/L | EPA 200.7 |
| Zinc | 0.029 | mg/L | EPA 200.7 |
| Mercury | <0.0005 | mg/L | EPA 245.1 |
| Total Suspended Solids | 38 | mg/L | SM 2540 D |
| pH | 7.37 | pH Units | SM 4500-H+ B |

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Jeffrey Cooper, Laboratory Manager

a6/krd

**SPECTRA Laboratories**
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(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**
Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y ___ N ___ Page ___ of ___

# CHAIN of CUSTODY

SPECTRA PROJECT # 2017120578

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction
ADDRESS:
ADDRESS CHANGE ☐

PROJECT: Portside 55 North
CONTACT: Jason Nix
SAMPLED BY: Jason Nix
PHONE: 206-406-7979 FAX:
e-MAIL: X2 SEE BELOW Prefer FAX or e-MAIL ☐
PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS | | | | | | | ORGANICS | | | | | | METALS | | | | | OTHER | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TPO - Bulk 624 & 625 | TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide | | | | |
| 1 | 12-20 TANK-1 | 12/20/17 | 7:30am | WW | 9 | | | | | | X | | | | | | | X | | X | X | | | X | | | | | X | X | X | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | JASON A. NIX | SIERRA | 12 20 17 | 9:17 |
| RECEIVED BY | | Kaitlyn Rudy | Spectra | 12-20-17 | 9:12AM |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

EMAIL TO BOTH -
BRYANP@SIERRAIND.COM &
JASONN@SIERRAIND.COM

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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12/21/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 12-20 Tank-2
Sample Matrix: Wastewater
Date Sampled: 12/20/2017
Date Received: 12/20/2017
Spectra Project: 2017120519
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| HEM-SGT in Water | <6.0* | mg/L | EPA 1664-B |
| Arsenic | < 0.05 | mg/L | EPA 200.7 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 |
| Chromium | < 0.007 | mg/L | EPA 200.7 |
| Copper | < 0.006 | mg/L | EPA 200.7 |
| Lead | < 0.04 | mg/L | EPA 200.7 |
| Molybdenum | < 0.01 | mg/L | EPA 200.7 |
| Nickel | < 0.015 | mg/L | EPA 200.7 |
| Selenium | < 0.05 | mg/L | EPA 200.7 |
| Silver | < 0.007 | mg/L | EPA 200.7 |
| Zinc | 0.022 | mg/L | EPA 200.7 |
| Mercury | <0.0005 | mg/L | EPA 245.1 |
| Total Suspended Solids | 12 | mg/L | SM 2540 D |
| pH | 7.34 | pH Units | SM 4500-H+ B |

*Reporting limit elevated due to low sample volume.

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a5/krd

**SPECTRA Laboratories**
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(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**
Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 2017120519

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction ADDRESS: ADDRESS CHANGE ☐

PROJECT: Portside 55 North

CONTACT: Jason Nix

SAMPLED BY: Jason Nix

PHONE: 206-406-7979 FAX:

e-MAIL: X2 SEE BELOW Prefer FAX ☐ or e-MAIL ☐

PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TEQ - Both 624 & 625 | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12-20 TANK-2 | 12/20/17 | 7:45am | WW | 9 | | | | | | X | | | | | | | X | | X | X | | | X | | | | | X | X | X* | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | JASON A. NIX | SIERRA | 12-20-17 | 9:12A |
| RECEIVED BY | | Kaitlyn Riley | Spectra | 12-20-17 | 9:12Am |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

EMAIL TO BOTH -
BRYANP@SIERRAIND.COM &
JASONN@SIERRAIND.COM

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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11/29/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 1
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110695
Spectra Number: 1
Rush

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| HEM-SGT in Water | <5.0 | mg/L | EPA 1664-B | 1,4-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Arsenic | < 0.05 | mg/L | EPA 200.7 | 2-Chloroethylvinyl Ether | <10 | µg/L | EPA 624 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 | Acrolein | <10 | µg/L | EPA 624 |
| Chromium | 0.019 | mg/L | EPA 200.7 | Acrylonitrile | <10 | µg/L | EPA 624 |
| Copper | 0.028 | mg/L | EPA 200.7 | Benzene | <1 | µg/L | EPA 624 |
| Lead | < 0.04 | mg/L | EPA 200.7 | Bromodichloromethane | <1 | µg/L | EPA 624 |
| Molybdenum | 0.01 | mg/L | EPA 200.7 | Bromoform | <1 | µg/L | EPA 624 |
| Nickel | < 0.015 | mg/L | EPA 200.7 | Carbon Tetrachloride | <1 | µg/L | EPA 624 |
| Selenium | < 0.05 | mg/L | EPA 200.7 | Chlorobenzene | <1 | µg/L | EPA 624 |
| Silver | < 0.007 | mg/L | EPA 200.7 | Chlorodibromomethane | <1 | µg/L | EPA 624 |
| Zinc | 0.068 | mg/L | EPA 200.7 | Chloroethane | <1 | µg/L | EPA 624 |
| 1,1,1-Trichloroethane | <1 | µg/L | EPA 624 | Chloroform | <1 | µg/L | EPA 624 |
| 1,1,2,2-Tetrachloroethane | <1 | µg/L | EPA 624 | Chloromethane | <1 | µg/L | EPA 624 |
| 1,1,2-Trichloroethane | <1 | µg/L | EPA 624 | Ethylbenzene | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethane | <1 | µg/L | EPA 624 | Hexachlorobutadiene | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethene | <1 | µg/L | EPA 624 | Methyl bromide | <1 | µg/L | EPA 624 |
| 1,2,4-Trichlorobenzene | <1 | µg/L | EPA 624 | Methylene chloride | <5 | µg/L | EPA 624 |
| 1,2-Dichlorobenzene | <1 | µg/L | EPA 624 | Naphthalene | <1 | µg/L | EPA 624 |
| 1,2-Dichloroethane | <1 | µg/L | EPA 624 | Tetrachloroethene | <1 | µg/L | EPA 624 |
| 1,2-Dichloropropane | <1 | µg/L | EPA 624 | Toluene | <1 | µg/L | EPA 624 |
| 1,3-Dichlorobenzene | <1 | µg/L | EPA 624 | Total Xylenes | <2 | µg/L | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 96 | EPA 624 |
| 1,2-Dichloroethane-d4 | 111 | EPA 624 |
| Toluene-d8 | 109 | EPA 624 |
| 4-Bromofluorobenzene | 123 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 65 | EPA 625 |
| Phenol-d6 | 65 | EPA 625 |
| Nitrobenzene-d5 | 70 | EPA 625 |
| 2-Fluorobiphenyl | 67 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

jjb/jjb

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11/29/2017

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 1
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110695
Spectra Number: 1
Rush

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

| Analyte | Result | Units | Method |
|---|---|---|---|
| Trichloroethene | <1 | µg/L | EPA 624 |
| Vinyl chloride | <1 | µg/L | EPA 624 |
| cis-1,3-Dichloropropene | <1 | µg/L | EPA 624 |
| trans-1,2-Dichloroethene | <1 | µg/L | EPA 624 |
| trans-1,3-Dichloropropene | <1 | µg/L | EPA 624 |
| 1,2 diphenylhydrazine | <2.5 | µg/L | EPA 625 |
| 1,2,4-Trichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,2-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,3-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,4-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 2,4,6-Trichlorophenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dichlorophenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dimethylphenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dinitrophenol | <10 | µg/L | EPA 625 |
| 2,4-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| 2,6-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| 2-Chloronaphthalene | <2.5 | µg/L | EPA 625 |
| 2-Chlorophenol | <2.5 | µg/L | EPA 625 |
| 2-Nitrophenol | <2.5 | µg/L | EPA 625 |
| 3,3-Dichlorobenzidine | <20 | µg/L | EPA 625 |
| 4,6-Dinitro-2-Methylphenol | <10 | µg/L | EPA 625 |

| Analyte | Result | Units | Method |
|---|---|---|---|
| 4-Bromophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 4-Chloro-3-Methylphenol | <2.5 | µg/L | EPA 625 |
| 4-Chlorophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 4-Nitrophenol | <2.5 | µg/L | EPA 625 |
| Acenaphthene | <1.0 | µg/L | EPA 625 |
| Acenaphthylene | <1.0 | µg/L | EPA 625 |
| Anthracene | <1.0 | µg/L | EPA 625 |
| Benzidine | <20 | µg/L | EPA 625 |
| Benzo(a)Anthracene | <1.0 | µg/L | EPA 625 |
| Benzo(a)Pyrene | <1.0 | µg/L | EPA 625 |
| Benzo(b)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Benzo(ghi)Perylene | <1.0 | µg/L | EPA 625 |
| Benzo(k)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Bis(2-Chloroethyl)Ether | <2.5 | µg/L | EPA 625 |
| Butylbenzylphthalate | <2.5 | µg/L | EPA 625 |
| Chrysene | <1.0 | µg/L | EPA 625 |
| Di-n-Butylphthalate | <2.5 | µg/L | EPA 625 |
| Di-n-Octyl Phthalate | <2.5 | µg/L | EPA 625 |
| Dibenzo(a,h)Anthracene | <1.0 | µg/L | EPA 625 |
| Diethylphthalate | <2.5 | µg/L | EPA 625 |
| Dimethyl Phthalate | <2.5 | µg/L | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 96 | EPA 624 |
| 1,2-Dichloroethane-d4 | 111 | EPA 624 |
| Toluene-d8 | 109 | EPA 624 |
| 4-Bromofluorobenzene | 123 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 65 | EPA 625 |
| Phenol-d6 | 65 | EPA 625 |
| Nitrobenzene-d5 | 70 | EPA 625 |
| 2-Fluorobiphenyl | 67 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a14-jjb

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11/29/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 1
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110695
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| Fluoranthene | <1.0 | µg/L | EPA 625 |
| Fluorene | <1.0 | µg/L | EPA 625 |
| Hexachlorobenzene | <2.5 | µg/L | EPA 625 |
| Hexachlorobutadiene | <2.5 | µg/L | EPA 625 |
| Hexachlorocyclopentadiene | <2.5 | µg/L | EPA 625 |
| Hexachloroethane | <2.5 | µg/L | EPA 625 |
| Indeno(1,2,3-cd)Pyrene | <1.0 | µg/L | EPA 625 |
| Isophorone | <2.5 | µg/L | EPA 625 |
| N-Nitroso-Di-n-Propylamine | <2.5 | µg/L | EPA 625 |
| N-Nitrosodiphenylamine | <2.5 | µg/L | EPA 625 |
| N-nitrosodimethylamine | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1.0 | µg/L | EPA 625 |
| Nitrobenzene | <2.5 | µg/L | EPA 625 |
| Pentachlorophenol | <2.5 | µg/L | EPA 625 |
| Phenanthrene | <1.0 | µg/L | EPA 625 |
| Phenol | <2.5 | µg/L | EPA 625 |
| Pyrene | <1.0 | µg/L | EPA 625 |
| bis(2-Chloroethoxy)Methane | <2.5 | µg/L | EPA 625 |
| bis(2-Ethylhexyl)Phthalate | <2.5 | µg/L | EPA 625 |
| bis(2-chloroisopropyl)Ether | <2.5 | µg/L | EPA 625 |
| Total Suspended Solids | 100 | mg/L | SM 2540 D |

| Analyte | Result | Units | Method |
|---|---|---|---|
| Total Cyanide | <0.01 | mg/L | SM 4500-CN⁻ E |
| pH | 7.08 | pH | SM 4500-H+ B |
| Hexavalent Chromium | <0.01 | mg/L | SW846 7196A |
| Mercury | <0.0005 | mg/L | SW846 7470A |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 96 | EPA 624 |
| 1,2-Dichloroethane-d4 | 111 | EPA 624 |
| Toluene-d8 | 109 | EPA 624 |
| 4-Bromofluorobenzene | 123 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 65 | EPA 625 |
| Phenol-d6 | 65 | EPA 625 |
| Nitrobenzene-d5 | 70 | EPA 625 |
| 2-Fluorobiphenyl | 67 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a14/jjb

# SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 1217110695

STANDARD [ ] RUSH [X]

CLIENT: Sierra Construction ADDRESS: ADDRESS CHANGE [ ]

PROJECT: Portside 55 North

CONTACT: Jason Nix

SAMPLED BY: Jason Nix

PHONE: 206-406-7979 FAX:

e-MAIL: JASONN@SIERRAIND.COM Prefer FAX or e-MAIL [X]

PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TTO - Both 624 & 625 | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11-22 Tank 1 | 112217 | 1:15P | WW | 9 | | | | | | X | | | | | | | X | | X | X | | | X | | | | | X | X | X* |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | Jason A. Nix | Sierra | 11 22 17 | 1:40PM |
| RECEIVED BY | Marie Holt | MARIE HOLT | Spectra | 11-22-17 | 1:40pm |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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11/29/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 2
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110696
Spectra Number: 1
Rush

| Analyte | Result | Units | Method | Analyte | Result | Units | Method |
|---|---|---|---|---|---|---|---|
| HEM-SGT in Water | <5.0 | mg/L | EPA 1664-B | 1,4-Dichlorobenzene | <1 | µg/L | EPA 624 |
| Arsenic | < 0.05 | mg/L | EPA 200.7 | 2-Chloroethylvinyl Ether | <10 | µg/L | EPA 624 |
| Cadmium | < 0.003 | mg/L | EPA 200.7 | Acrolein | <10 | µg/L | EPA 624 |
| Chromium | 0.022 | mg/L | EPA 200.7 | Acrylonitrile | <10 | µg/L | EPA 624 |
| Copper | 0.028 | mg/L | EPA 200.7 | Benzene | <1 | µg/L | EPA 624 |
| Lead | < 0.04 | mg/L | EPA 200.7 | Bromodichloromethane | <1 | µg/L | EPA 624 |
| Molybdenum | 0.01 | mg/L | EPA 200.7 | Bromoform | <1 | µg/L | EPA 624 |
| Nickel | < 0.015 | mg/L | EPA 200.7 | Carbon Tetrachloride | <1 | µg/L | EPA 624 |
| Selenium | < 0.05 | mg/L | EPA 200.7 | Chlorobenzene | <1 | µg/L | EPA 624 |
| Silver | < 0.007 | mg/L | EPA 200.7 | Chlorodibromomethane | <1 | µg/L | EPA 624 |
| Zinc | 0.073 | mg/L | EPA 200.7 | Chloroethane | <1 | µg/L | EPA 624 |
| 1,1,1-Trichloroethane | <1 | µg/L | EPA 624 | Chloroform | <1 | µg/L | EPA 624 |
| 1,1,2,2-Tetrachloroethane | <1 | µg/L | EPA 624 | Chloromethane | <1 | µg/L | EPA 624 |
| 1,1,2-Trichloroethane | <1 | µg/L | EPA 624 | Ethylbenzene | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethane | <1 | µg/L | EPA 624 | Hexachlorobutadiene | <1 | µg/L | EPA 624 |
| 1,1-Dichloroethene | <1 | µg/L | EPA 624 | Methyl bromide | <1 | µg/L | EPA 624 |
| 1,2,4-Trichlorobenzene | <1 | µg/L | EPA 624 | Methylene chloride | <5 | µg/L | EPA 624 |
| 1,2-Dichlorobenzene | <1 | µg/L | EPA 624 | Naphthalene | <1 | µg/L | EPA 624 |
| 1,2-Dichloroethane | <1 | µg/L | EPA 624 | Tetrachloroethene | <1 | µg/L | EPA 624 |
| 1,2-Dichloropropane | <1 | µg/L | EPA 624 | Toluene | <1 | µg/L | EPA 624 |
| 1,3-Dichlorobenzene | <1 | µg/L | EPA 624 | Total Xylenes | <2 | µg/L | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 97 | EPA 624 |
| 1,2-Dichloroethane-d4 | 110 | EPA 624 |
| Toluene-d8 | 107 | EPA 624 |
| 4-Bromofluorobenzene | 117 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 60 | EPA 625 |
| Phenol-d6 | 60 | EPA 625 |
| Nitrobenzene-d5 | 61 | EPA 625 |
| 2-Fluorobiphenyl | 63 | EPA 625 |

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Jeffrey Cooper, Laboratory Manager

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11/29/2017

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 2
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110696
Spectra Number: 1
Rush

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

| Analyte | Result | Units | Method |
|---|---|---|---|
| Trichloroethene | <1 | µg/L | EPA 624 |
| Vinyl chloride | <1 | µg/L | EPA 624 |
| cis-1,3-Dichloropropene | <1 | µg/L | EPA 624 |
| trans-1,2-Dichloroethene | <1 | µg/L | EPA 624 |
| trans-1,3-Dichloropropene | <1 | µg/L | EPA 624 |
| 1,2 diphenylhydrazine | <2.5 | µg/L | EPA 625 |
| 1,2,4-Trichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,2-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,3-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 1,4-Dichlorobenzene | <2.5 | µg/L | EPA 625 |
| 2,4,6-Trichlorophenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dichlorophenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dimethylphenol | <2.5 | µg/L | EPA 625 |
| 2,4-Dinitrophenol | <10 | µg/L | EPA 625 |
| 2,4-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| 2,6-Dinitrotoluene | <2.5 | µg/L | EPA 625 |
| 2-Chloronaphthalene | <2.5 | µg/L | EPA 625 |
| 2-Chlorophenol | <2.5 | µg/L | EPA 625 |
| 2-Nitrophenol | <2.5 | µg/L | EPA 625 |
| 3,3-Dichlorobenzidine | <20 | µg/L | EPA 625 |
| 4,6-Dinitro-2-Methylphenol | <10 | µg/L | EPA 625 |

| Analyte | Result | Units | Method |
|---|---|---|---|
| 4-Bromophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 4-Chloro-3-Methylphenol | <2.5 | µg/L | EPA 625 |
| 4-Chlorophenyl-phenylether | <2.5 | µg/L | EPA 625 |
| 4-Nitrophenol | <2.5 | µg/L | EPA 625 |
| Acenaphthene | <1.0 | µg/L | EPA 625 |
| Acenaphthylene | <1.0 | µg/L | EPA 625 |
| Anthracene | <1.0 | µg/L | EPA 625 |
| Benzidine | <20 | µg/L | EPA 625 |
| Benzo(a)Anthracene | <1.0 | µg/L | EPA 625 |
| Benzo(a)Pyrene | <1.0 | µg/L | EPA 625 |
| Benzo(b)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Benzo(ghi)Perylene | <1.0 | µg/L | EPA 625 |
| Benzo(k)Fluoranthene | <1.0 | µg/L | EPA 625 |
| Bis(2-Chloroethyl)Ether | <2.5 | µg/L | EPA 625 |
| Butylbenzylphthalate | <2.5 | µg/L | EPA 625 |
| Chrysene | <1.0 | µg/L | EPA 625 |
| Di-n-Butylphthalate | <2.5 | µg/L | EPA 625 |
| Di-n-Octyl Phthalate | <2.5 | µg/L | EPA 625 |
| Dibenzo(a,h)Anthracene | <1.0 | µg/L | EPA 625 |
| Diethylphthalate | <2.5 | µg/L | EPA 625 |
| Dimethyl Phthalate | <2.5 | µg/L | EPA 625 |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 97 | EPA 624 |
| 1,2-Dichloroethane-d4 | 110 | EPA 624 |
| Toluene-d8 | 107 | EPA 624 |
| 4-Bromofluorobenzene | 117 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 60 | EPA 625 |
| Phenol-d6 | 60 | EPA 625 |
| Nitrobenzene-d5 | 61 | EPA 625 |
| 2-Fluorobiphenyl | 63 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

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11/29/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 11-22 Tank 2
Sample Matrix: Wastewater
Date Sampled: 11/22/2017
Date Received: 11/22/2017
Spectra Project: 2017110696
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| Fluoranthene | <1.0 | µg/L | EPA 625 |
| Fluorene | <1.0 | µg/L | EPA 625 |
| Hexachlorobenzene | <2.5 | µg/L | EPA 625 |
| Hexachlorobutadiene | <2.5 | µg/L | EPA 625 |
| Hexachlorocyclopentadiene | <2.5 | µg/L | EPA 625 |
| Hexachloroethane | <2.5 | µg/L | EPA 625 |
| Indeno(1,2,3-cd)Pyrene | <1.0 | µg/L | EPA 625 |
| Isophorone | <2.5 | µg/L | EPA 625 |
| N-Nitroso-Di-n-Propylamine | <2.5 | µg/L | EPA 625 |
| N-Nitrosodiphenylamine | <2.5 | µg/L | EPA 625 |
| N-nitrosodimethylamine | <2.5 | µg/L | EPA 625 |
| Naphthalene | <1.0 | µg/L | EPA 625 |
| Nitrobenzene | <2.5 | µg/L | EPA 625 |
| Pentachlorophenol | <2.5 | µg/L | EPA 625 |
| Phenanthrene | <1.0 | µg/L | EPA 625 |
| Phenol | <2.5 | µg/L | EPA 625 |
| Pyrene | <1.0 | µg/L | EPA 625 |
| bis(2-Chloroethoxy)Methane | <2.5 | µg/L | EPA 625 |
| bis(2-Ethylhexyl)Phthalate | <2.5 | µg/L | EPA 625 |
| bis(2-chloroisopropyl)Ether | <2.5 | µg/L | EPA 625 |
| Total Suspended Solids | 100 | mg/L | SM 2540 D |

| Analyte | Result | Units | Method |
|---|---|---|---|
| Total Cyanide | <0.01 | mg/L | SM 4500-CN⁻ E |
| pH | 7.10 | pH | SM 4500-H+ B |
| Hexavalent Chromium | <0.01 | mg/L | SW846 7196A |
| Mercury | <0.0005 | mg/L | SW846 7470A |

| Surrogate | Recovery | Method |
|---|---|---|
| Dibromofluoromethane | 97 | EPA 624 |
| 1,2-Dichloroethane-d4 | 110 | EPA 624 |
| Toluene-d8 | 107 | EPA 624 |
| 4-Bromofluorobenzene | 117 | EPA 624 |

| Surrogate | Recovery | Method |
|---|---|---|
| 2-Fluorophenol | 60 | EPA 625 |
| Phenol-d6 | 60 | EPA 625 |
| Nitrobenzene-d5 | 61 | EPA 625 |
| 2-Fluorobiphenyl | 63 | EPA 625 |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

414/jjb

# SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # D17110696

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction ADDRESS: ADDRESS CHANGE ☐

PROJECT: Portside 55 North

CONTACT: Jason Nix

SAMPLED BY: Jason Nix

PHONE: 206-406-7979 FAX:

e-MAIL: JASONN@SIERRAIND.COM Prefer FAX or e-MAIL ☒

PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TTO - Both 624 & 625 | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide | Free Cyanide |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11-22 Tank 2 | 112217 | 1:30P | WW | 9 | | | | | | X | | | | | | | X | | X | X | | | X | | | | | X | X | X* |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | Jason A. Nix | Sierra | 11 22 17 | 1:40PM |
| RECEIVED BY | Marie Holt | MARIE HOLT | Spectra | 11-22-17 | 1:39 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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12/14/2017

Sierra Construction Company, Inc.
19900 144th Ave NE
Woodinville, WA 98072

P.O.#: 11714
Project: Portside 55 North
Client ID: 12-12 Tank 1
Sample Matrix: Wastewater
Date Sampled: 12/12/2017
Date Received: 12/12/2017
Spectra Project: 2017120264
Spectra Number: 1
Rush

| Analyte | Result | Units | Method |
|---|---|---|---|
| HEM-SGT in Water | 14 | mg/L | EPA 1664-B |
| Arsenic | < 0.05 | mg/L | EPA 200.7 |
| Cadmium | 0.008 | mg/L | EPA 200.7 |
| Chromium | 0.254 | mg/L | EPA 200.7 |
| Copper | 0.469 | mg/L | EPA 200.7 |
| Lead | 0.43 | mg/L | EPA 200.7 |
| Molybdenum | < 0.01 | mg/L | EPA 200.7 |
| Nickel | 0.237 | mg/L | EPA 200.7 |
| Selenium | < 0..05 | mg/L | EPA 200.7 |
| Silver | < 0.007 | mg/L | EPA 200.7 |
| Zinc | 1.34 | mg/L | EPA 200.7 |
| Mercury | 0.0016 | mg/L | EPA 245.1 |
| Total Suspended Solids | 5000 | mg/L | SM 2540 D |
| pH | 7.36 | pH Units | SM 4500-H+ B |

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a5/krd

# SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

Metals - Arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, zinc

* Free Cyanide if Total Cyanide is above 0.2

Return Samples Y ___ N ___ Page ___ of ___

# CHAIN of CUSTODY

SPECTRA PROJECT # 1711207464

STANDARD ☐ RUSH ☒

CLIENT: Sierra Construction

ADDRESS:

ADDRESS CHANGE ☐

PROJECT: Portside 55 North

CONTACT: Jason Nix

SAMPLED BY: JASON NIX

PHONE: 206-406-7979 FAX:

e-MAIL: X2 SEE BELOW Prefer FAX ☐ or e-MAIL ☐

PURCHASE ORDER #: 11714

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 SEMI VOA | 8270 PAH/PNA | 8082/608 PCB | TPH - Both 624 & 625 — NEW | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) | Hexavalent Chromium — NEW | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) TSS | Total Cyanide — NEW | Free Cyanide — NEW | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12-12 TANK 1 | 121217 | 8:15a | WW | 9 | | | | | | X | | | | | | | X | | X | | | | X | | | | | X | X | X* | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | JASON A. NIX | SIERRA | 12 12 17 | 8:45 |
| RECEIVED BY | Marie Holt | MARIE HOLT | Spectra | 12-12-17 | 8:43a.m |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

EMAIL TO BOTH -
BRYANP@SIERRAIND.COM &
JASONN@SIERRAIND.COM

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

April 30, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on April 19, 2018 from the Ave 55 - Taylor Way, F&BI 804329 project. There are 13 pages included in this report.

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: Kristin Anderson
FDS0430R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 19, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55 - Taylor Way, F&BI 804329 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 804329 -01 | Loc 12 |
| 804329 -02 | Loc 16 |
| 804329 -03 | Loc 9 |

Water was present in sample Loc 16. The analysis was placed on hold.

The TO-15 propene concentration in sample Loc 12 exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329
Date Extracted: 04/27/18
Date Analyzed: 04/27/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| Loc 12<br>804329-01 | <0.6 |
| Loc 16<br>804329-03 | 1.1 |
| Method Blank | <0.6 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 12 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-01 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042510.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,200 |
| APH EC9-12 aliphatics | 380 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 9 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-03 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042511.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,500 |
| APH EC9-12 aliphatics | 510 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | Not Applicable | Lab ID: | 08-0846 mb |
| Date Analyzed: | 04/25/18 | Data File: | 042509.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 12 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-01 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042510.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <3.5 | <1 | 1-Butanol | <61 | <20 |
| Propene | 1,700 ve | 1,000 ve | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 490 | 100 | Benzene | 5.9 | 1.8 |
| Chloromethane | 8.5 | 4.1 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 540 | 240 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | <0.22 | <0.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <3.9 | <1 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | 6.1 | 1.1 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 5.2 | 1.4 |
| Pentane | 270 | 92 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | 180 | 32 | 3-Hexanone | <41 | <10 |
| Acetone | 190 | 79 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 7.0 | 2.5 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | 61 | 21 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | 5.0 | 1.2 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 49 | 14 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | 2.5 | 0.52 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 0.97 | 0.24 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | 13 | 2.4 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Loc 9 | Client: | Floyd-Snider |
| Date Received: | 04/19/18 | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | 04/18/18 | Lab ID: | 804329-03 1/10 |
| Date Analyzed: | 04/25/18 | Data File: | 042511.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <3.5 | <1 | 1-Butanol | <61 | <20 |
| Propene | 770 | 450 | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 200 | 40 | Benzene | 15 | 4.8 |
| Chloromethane | 9.9 | 4.8 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 440 | 190 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | <0.22 | <0.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <3.9 | <1 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | <2.7 | <0.5 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 14 | 3.7 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | 470 | 83 | 3-Hexanone | <41 | <10 |
| Acetone | <48 | <20 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | <2.8 | <1 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | 15 | 5.4 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | <4 | <1 | 1,3-Dichlorobenzene | 25 | 4.1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 43 | 12 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | 3.1 | 0.63 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 0.73 | 0.18 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | 24 | 4.5 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 804329 |
| Date Collected: | Not Applicable | Lab ID: | 08-0846 mb |
| Date Analyzed: | 04/25/18 | Data File: | 042509.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <0.39 | <0.1 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | <0.1 | <0.02 |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 804329-03 (Duplicate)

| Analyte | Sample Result (%) | Duplicate Result (%) | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|
| Helium | 1.1 | <0.6 | nm | 0-50 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: 804329-03 1/10 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 25) |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 1,500 | 1,700 | 12 |
| APH EC9-12 aliphatics | ug/m3 | 510 | 550 | 8 |
| APH EC9-10 aromatics | ug/m3 | <250 | <250 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 230 | 74 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 350 | 97 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 251 | 80 | 70-130 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 10 | 98 | 70-130 |
| Propene | ppbv | 10 | 88 | 70-130 |
| Dichlorodifluoromethane | ppbv | 10 | 98 | 70-130 |
| Chloromethane | ppbv | 10 | 104 | 70-130 |
| F-114 | ppbv | 10 | 103 | 70-130 |
| Isobutene | ppbv | 10 | 100 | 70-130 |
| Acetaldehyde | ppbv | 10 | 97 | 70-130 |
| Vinyl chloride | ppbv | 10 | 106 | 70-130 |
| 1,3-Butadiene | ppbv | 10 | 104 | 70-130 |
| Bromomethane | ppbv | 10 | 129 | 70-130 |
| Chloroethane | ppbv | 10 | 105 | 70-130 |
| Ethanol | ppbv | 10 | 97 | 70-130 |
| Acetonitrile | ppbv | 10 | 106 | 70-130 |
| Acrolein | ppbv | 10 | 98 | 70-130 |
| Acrylonitrile | ppbv | 10 | 98 | 70-130 |
| Pentane | ppbv | 10 | 93 | 70-130 |
| Trichlorofluoromethane | ppbv | 10 | 90 | 70-130 |
| Acetone | ppbv | 10 | 93 | 70-130 |
| 2-Propanol | ppbv | 10 | 82 | 70-130 |
| Isoprene | ppbv | 10 | 95 | 70-130 |
| Iodomethane | ppbv | 10 | 93 | 70-130 |
| 1,1-Dichloroethene | ppbv | 10 | 100 | 70-130 |
| Methacrolein | ppbv | 10 | 95 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 10 | 100 | 70-130 |
| Cyclopentane | ppbv | 10 | 99 | 70-130 |
| Methyl Vinyl Ketone | ppbv | 10 | 99 | 70-130 |
| Butanal | ppbv | 10 | 96 | 70-130 |
| Methylene chloride | ppbv | 10 | 87 | 70-130 |
| CFC-113 | ppbv | 10 | 96 | 70-130 |
| Carbon disulfide | ppbv | 10 | 93 | 70-130 |
| Methyl t-butyl ether | ppbv | 10 | 89 | 70-130 |
| Vinyl acetate | ppbv | 10 | 77 | 70-130 |
| 1,1-Dichloroethane | ppbv | 10 | 101 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 10 | 101 | 70-130 |
| Hexane | ppbv | 10 | 93 | 70-130 |
| Chloroform | ppbv | 10 | 103 | 70-130 |
| 2-Butanone (MEK) | ppbv | 10 | 96 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 10 | 100 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 10 | 95 | 70-130 |
| 1-Butanol | ppbv | 10 | 84 | 70-130 |
| Carbon tetrachloride | ppbv | 10 | 89 | 70-130 |

Date of Report: 04/30/18
Date Received: 04/19/18
Project: Ave 55 - Taylor Way, F&BI 804329

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (Continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ppbv | 10 | 103 | 70-130 |
| Cyclohexane | ppbv | 10 | 95 | 70-130 |
| 2-Pentanone | ppbv | 10 | 95 | 70-130 |
| 3-Pentanone | ppbv | 10 | 106 | 70-130 |
| Pentanal | ppbv | 10 | 97 | 70-130 |
| 1,2-Dichloropropane | ppbv | 10 | 105 | 70-130 |
| 1,4-Dioxane | ppbv | 10 | 87 | 70-130 |
| Bromodichloromethane | ppbv | 10 | 104 | 70-130 |
| Trichloroethene | ppbv | 10 | 102 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 10 | 92 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 10 | 86 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 10 | 88 | 70-130 |
| Toluene | ppbv | 10 | 99 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 10 | 102 | 70-130 |
| 3-Hexanone | ppbv | 10 | 90 | 70-130 |
| 2-Hexanone | ppbv | 10 | 90 | 70-130 |
| Hexanal | ppbv | 10 | 93 | 70-130 |
| Tetrachloroethene | ppbv | 10 | 99 | 70-130 |
| Dibromochloromethane | ppbv | 10 | 105 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 10 | 103 | 70-130 |
| Chlorobenzene | ppbv | 10 | 98 | 70-130 |
| Ethylbenzene | ppbv | 10 | 100 | 70-130 |
| 1,1,2,2-Tetrachloroethane | ppbv | 10 | 103 | 70-130 |
| m,p-Xylene | ppbv | 20 | 101 | 70-130 |
| o-Xylene | ppbv | 10 | 103 | 70-130 |
| Styrene | ppbv | 10 | 98 | 70-130 |
| Bromoform | ppbv | 10 | 104 | 70-130 |
| Benzyl chloride | ppbv | 10 | 81 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 10 | 96 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 10 | 94 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 10 | 102 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 10 | 103 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 10 | 96 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 10 | 102 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 10 | 84 | 70-130 |
| Naphthalene | ppbv | 10 | 104 | 70-130 |
| Hexachlorobutadiene | ppbv | 10 | 97 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

804329

# SAMPLE CHAIN OF CUSTODY HE 04-19-18

Page # 1 of 1

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Arc 55 - Taylor Way

PO #:

REPORTING LEVEL
☐ Indoor Air ☒ Deep Soil Gas
☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO:

TURNAROUND TIME
☐ Standard
☒ RUSH 5-day
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | ~~Helium TO-15 BTEXN~~ | ~~Fac Ger TO-15 cVOCs~~ | APH's | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOC 12 | 01 | 2433 | 18 | 4/18/18 | 30 | 0924 | 2 | 0931 | | X | X | X | |
| LOC 16 | 02 | 3389 | 224 | 4/18/18 | 30 | 1621 | 15 | 1643 | | X | X | X | water msample pt - likely bad sample |
| LOC 9 | 03 | 3672 | 01 | 4/18/18 | 30 | 1651 | 2 | 1659 | | X | X | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | ~~Samples received at~~ 20°C |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

He detection for leaks

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kristin Andersen | FS | 4/19/18 | 0830 |
| Received by: | Eric Clow | FSB | 4/19/18 | 0830 |
| Relinquished by: | | | | |
| Received by: | | | | |

*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.
Arina Podnozova, B.S.
Eric Young, B.S.

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

May 23, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on May 10, 2018 from the Ave 55 - Taylor Way, F&BI 805181 project. There are 18 pages included in this report.

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: Kristin Anderson
FDS0523R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 10, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55 - Taylor Way, F&BI 805181 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 805181 -01 | Ambient |
| 805181 -02 | LOC 09 |
| 805181 -03 | LOC 109 |
| 805181 -04 | LOC 16 |

The TO-15 methylene chloride calibration verification was outside of control limits. The data were qualified accordingly.

The APH and several TO-15 compounds exceeded the calibration range. The TO-15 samples were analyzed at a dilution and the data were qualified accordingly.

Naphthalene was present in the TO-15 method blank. In addition, EDB was detected below the reporting limit in the method blank. The data and affected samples were qualified accordingly.

All other quality control requirements were acceptable.

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Ambient | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-01 |
| Date Analyzed: | 05/14/18 | Data File: | 051416.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 79 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 63 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 09 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-02 1/1.5 |
| Date Analyzed: | 05/14/18 | Data File: | 051417.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,100 ve |
| APH EC9-12 aliphatics | 1,600 |
| APH EC9-10 aromatics | <37 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 109 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-03 1/1.5 |
| Date Analyzed: | 05/15/18 | Data File: | 051418.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 107 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,500 ve |
| APH EC9-12 aliphatics | 2,600 |
| APH EC9-10 aromatics | <37 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 16 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-04 1/4 |
| Date Analyzed: | 05/15/18 | Data File: | 051419.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 24,000 ve |
| APH EC9-12 aliphatics | 24,000 ve |
| APH EC9-10 aromatics | <100 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | Not Applicable | Lab ID: | 08-1000 mb |
| Date Analyzed: | 05/14/18 | Data File: | 051406.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 80 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Ambient | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-01 |
| Date Analyzed: | 05/14/18 | Data File: | 051416.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.0 | 0.29 | 1-Butanol | <6.1 | <2 |
| Propene | <1.7 | <1 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | 2.8 | 0.57 | Benzene | 0.39 | 0.12 |
| Chloromethane | 1.3 | 0.64 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | 0.046 | 0.021 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | 0.98 | 0.25 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | 1.0 | 0.27 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | 1.4 | 0.25 | 3-Hexanone | <4.1 | <1 |
| Acetone | 8.9 | 3.8 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 ca | <25 ca | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | 0.17 | 0.034 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | 0.097 | 0.024 | Naphthalene | 0.16 fb | 0.031 fb |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 09 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-02 1/1.5 |
| Date Analyzed: | 05/14/18 | Data File: | 051417.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 115 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.53 | <0.15 | 1-Butanol | <9.1 | <3 |
| Propene | 670 ve | 390 ve | Carbon tetrachloride | <0.94 | <0.15 |
| Dichlorodifluoromethane | 76 | 15 | Benzene | 38 | 12 |
| Chloromethane | 12 | 5.8 | Cyclohexane | 24 | 6.9 |
| F-114 | <1 | <0.15 | 2-Pentanone | <5.3 | <1.5 |
| Isobutene | 480 ve | 210 ve | 3-Pentanone | <5.3 | <1.5 |
| Acetaldehyde | 52 | 29 | Pentanal | <5.3 | <1.5 |
| Vinyl chloride | <0.38 | <0.15 | 1,2-Dichloropropane | 2.9 | 0.62 |
| 1,3-Butadiene | <0.033 | <0.015 | 1,4-Dioxane | <0.54 | <0.15 |
| Bromomethane | <1.2 | <0.3 | Bromodichloromethane | <0.1 | <0.015 |
| Chloroethane | 1.4 | 0.53 | Trichloroethene | 0.61 | 0.11 |
| Ethanol | <11 | <6 | cis-1,3-Dichloropropene | <0.68 | <0.15 |
| Acetonitrile | <2.5 | <1.5 | 4-Methyl-2-pentanone | <6.1 | <1.5 |
| Acrolein | <1.4 | <0.6 | trans-1,3-Dichloropropene | <0.68 | <0.15 |
| Acrylonitrile | <0.33 | <0.15 | Toluene | 43 | 11 |
| Pentane | 210 | 71 | 1,1,2-Trichloroethane | <0.082 | <0.015 |
| Trichlorofluoromethane | 730 ve | 130 ve | 3-Hexanone | <6.1 | <1.5 |
| Acetone | 110 | 48 | 2-Hexanone | <6.1 | <1.5 |
| 2-Propanol | <13 | <5.2 | Hexanal | 6.6 | 1.6 |
| Isoprene | 11 | 3.8 | Tetrachloroethene | 3.5 | 0.51 |
| Iodomethane | <0.87 | <0.15 | Dibromochloromethane | <0.13 | <0.015 |
| 1,1-Dichloroethene | 0.76 | 0.19 | 1,2-Dibromoethane (EDB) | <0.12 | <0.015 |
| Methacrolein | <4.3 | <1.5 | Chlorobenzene | <0.69 | <0.15 |
| trans-1,2-Dichloroethene | <0.59 | <0.15 | Ethylbenzene | 12 | 2.7 |
| Cyclopentane | 14 | 5.0 | 1,1,2,2-Tetrachloroethane | <0.21 | <0.03 |
| Methyl vinyl ketone | <4.3 | <1.5 | m,p-Xylene | 28 | 6.5 |
| Butanal | 5.6 | 1.9 | o-Xylene | 11 | 2.5 |
| Methylene chloride | <130 ca | <37 ca | Styrene | 2.1 | 0.49 |
| CFC-113 | <1.1 | <0.15 | Bromoform | <3.1 | <0.3 |
| Carbon disulfide | 24 | 7.7 | Benzyl chloride | <0.078 | <0.015 |
| Methyl t-butyl ether (MTBE) | <2.7 | <0.75 | 1,3,5-Trimethylbenzene | 5.4 | 1.1 |
| Vinyl acetate | <11 | <3 | 1,2,4-Trimethylbenzene | 6.4 | 1.3 |
| 1,1-Dichloroethane | 2.1 | 0.52 | 1,3-Dichlorobenzene | 2.6 | 0.43 |
| cis-1,2-Dichloroethene | <0.59 | <0.15 | 1,4-Dichlorobenzene | <0.36 | <0.06 |
| Hexane | 93 | 26 | 1,2,3-Trimethylbenzene | <3.7 | <0.75 |
| Chloroform | 340 | 69 | 1,2-Dichlorobenzene | <0.9 | <0.15 |
| 2-Butanone (MEK) | 6.5 | 2.2 | 1,2,4-Trichlorobenzene | <1.1 | <0.15 |
| 1,2-Dichloroethane (EDC) | 2.3 | 0.58 | Naphthalene | 0.79 | 0.15 |
| 1,1,1-Trichloroethane | 44 | 8.1 | Hexachlorobutadiene | <0.32 | <0.03 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 09 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-02 1/15 |
| Date Analyzed: | 05/18/18 | Data File: | 051804.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 | ppbv |
|---|---|---|
| Propene | 640 | 370 |
| Isobutene | 450 | 190 |
| Trichlorofluoromethane | 650 | 120 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 109 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-03 1/1.5 |
| Date Analyzed: | 05/15/18 | Data File: | 051418.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 127 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.53 | <0.15 | 1-Butanol | <9.1 | <3 |
| Propene | 870 ve | 500 ve | Carbon tetrachloride | <0.94 | <0.15 |
| Dichlorodifluoromethane | 87 | 18 | Benzene | 38 | 12 |
| Chloromethane | 12 | 5.8 | Cyclohexane | 22 | 6.5 |
| F-114 | <1 | <0.15 | 2-Pentanone | <5.3 | <1.5 |
| Isobutene | 520 ve | 230 ve | 3-Pentanone | <5.3 | <1.5 |
| Acetaldehyde | 62 | 34 | Pentanal | <5.3 | <1.5 |
| Vinyl chloride | <0.38 | <0.15 | 1,2-Dichloropropane | 2.8 | 0.60 |
| 1,3-Butadiene | <0.033 | <0.015 | 1,4-Dioxane | <0.54 | <0.15 |
| Bromomethane | <1.2 | <0.3 | Bromodichloromethane | <0.1 | <0.015 |
| Chloroethane | 1.4 | 0.53 | Trichloroethene | 0.58 | 0.11 |
| Ethanol | <11 | <6 | cis-1,3-Dichloropropene | <0.68 | <0.15 |
| Acetonitrile | <2.5 | <1.5 | 4-Methyl-2-pentanone | <6.1 | <1.5 |
| Acrolein | <1.4 | <0.6 | trans-1,3-Dichloropropene | <0.68 | <0.15 |
| Acrylonitrile | <0.33 | <0.15 | Toluene | 45 | 12 |
| Pentane | 210 | 72 | 1,1,2-Trichloroethane | <0.082 | <0.015 |
| Trichlorofluoromethane | 710 ve | 130 ve | 3-Hexanone | <6.1 | <1.5 |
| Acetone | 110 | 46 | 2-Hexanone | <6.1 | <1.5 |
| 2-Propanol | <13 | <5.2 | Hexanal | 6.2 | 1.5 |
| Isoprene | 11 | 3.9 | Tetrachloroethene | 4.0 | 0.58 |
| Iodomethane | <0.87 | <0.15 | Dibromochloromethane | <0.13 | <0.015 |
| 1,1-Dichloroethene | 0.76 | 0.19 | 1,2-Dibromoethane (EDB) | <0.12 | <0.015 |
| Methacrolein | <4.3 | <1.5 | Chlorobenzene | <0.69 | <0.15 |
| trans-1,2-Dichloroethene | <0.59 | <0.15 | Ethylbenzene | 15 | 3.4 |
| Cyclopentane | 15 | 5.3 | 1,1,2,2-Tetrachloroethane | <0.21 | <0.03 |
| Methyl vinyl ketone | <4.3 | <1.5 | m,p-Xylene | 40 | 9.2 |
| Butanal | <4.4 | <1.5 | o-Xylene | 15 | 3.4 |
| Methylene chloride | <130 ca | <37 ca | Styrene | 3.6 | 0.83 |
| CFC-113 | <1.1 | <0.15 | Bromoform | <3.1 | <0.3 |
| Carbon disulfide | 23 | 7.5 | Benzyl chloride | <0.078 | <0.015 |
| Methyl t-butyl ether (MTBE) | <2.7 | <0.75 | 1,3,5-Trimethylbenzene | 9.2 | 1.9 |
| Vinyl acetate | <11 | <3 | 1,2,4-Trimethylbenzene | 13 | 2.7 |
| 1,1-Dichloroethane | 2.1 | 0.51 | 1,3-Dichlorobenzene | 1.2 | 0.19 |
| cis-1,2-Dichloroethene | <0.59 | <0.15 | 1,4-Dichlorobenzene | <0.36 | <0.06 |
| Hexane | 78 | 22 | 1,2,3-Trimethylbenzene | 7.3 | 1.5 |
| Chloroform | 310 | 64 | 1,2-Dichlorobenzene | <0.9 | <0.15 |
| 2-Butanone (MEK) | 7.2 | 2.4 | 1,2,4-Trichlorobenzene | <1.1 | <0.15 |
| 1,2-Dichloroethane (EDC) | 2.3 | 0.57 | Naphthalene | 1.9 | 0.37 |
| 1,1,1-Trichloroethane | 45 | 8.2 | Hexachlorobutadiene | <0.32 | <0.03 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 109 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-03 1/15 |
| Date Analyzed: | 05/18/18 | Data File: | 051805.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 | ppbv |
|---|---|---|
| Propene | 870 | 500 |
| Isobutene | 510 | 220 |
| Trichlorofluoromethane | 660 | 120 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 16 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-04 1/4 |
| Date Analyzed: | 05/15/18 | Data File: | 051419.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 121 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.4 | <0.4 | 1-Butanol | <24 | <8 |
| Propene | 3,100 ve | 1,800 ve | Carbon tetrachloride | <2.5 | <0.4 |
| Dichlorodifluoromethane | 2.8 | 0.56 | Benzene | 270 | 85 |
| Chloromethane | 12 | 5.6 | Cyclohexane | 380 | 110 |
| F-114 | <2.8 | <0.4 | 2-Pentanone | <14 | <4 |
| Isobutene | 2,100 ve | 910 ve | 3-Pentanone | <14 | <4 |
| Acetaldehyde | 330 | 180 | Pentanal | <14 | <4 |
| Vinyl chloride | 8.9 | 3.5 | 1,2-Dichloropropane | <0.92 | <0.2 |
| 1,3-Butadiene | <0.088 | <0.04 | 1,4-Dioxane | <1.4 | <0.4 |
| Bromomethane | <3.2 | <0.8 | Bromodichloromethane | <0.27 | <0.04 |
| Chloroethane | 1.2 | 0.44 | Trichloroethene | 2.5 | 0.47 |
| Ethanol | 100 | 53 | cis-1,3-Dichloropropene | <1.8 | <0.4 |
| Acetonitrile | <6.7 | <4 | 4-Methyl-2-pentanone | <16 | <4 |
| Acrolein | <3.7 | <1.6 | trans-1,3-Dichloropropene | <1.8 | <0.4 |
| Acrylonitrile | <0.87 | <0.4 | Toluene | 510 | 140 |
| Pentane | 890 ve | 300 ve | 1,1,2-Trichloroethane | <0.22 | <0.04 |
| Trichlorofluoromethane | 5.4 | 0.97 | 3-Hexanone | <16 | <4 |
| Acetone | 290 | 120 | 2-Hexanone | <16 | <4 |
| 2-Propanol | 290 | 120 | Hexanal | 76 | 19 |
| Isoprene | 69 | 25 | Tetrachloroethene | 3.1 | 0.46 |
| Iodomethane | <2.3 | <0.4 | Dibromochloromethane | 0.99 | 0.12 |
| 1,1-Dichloroethene | <1.6 | <0.4 | 1,2-Dibromoethane (EDB) | 0.77 fb | 0.10 fb |
| Methacrolein | <11 | <4 | Chlorobenzene | 2.2 | 0.49 |
| trans-1,2-Dichloroethene | 2.0 | 0.49 | Ethylbenzene | 62 | 14 |
| Cyclopentane | 110 | 39 | 1,1,2,2-Tetrachloroethane | 2.1 | 0.30 |
| Methyl vinyl ketone | <11 | <4 | m,p-Xylene | 200 | 46 |
| Butanal | <12 | <4 | o-Xylene | 84 | 19 |
| Methylene chloride | <350 ca | <100 ca | Styrene | 13 | 3.0 |
| CFC-113 | <3.1 | <0.4 | Bromoform | <8.3 | <0.8 |
| Carbon disulfide | 970 ve | 310 ve | Benzyl chloride | <0.21 | <0.04 |
| Methyl t-butyl ether (MTBE) | <7.2 | <2 | 1,3,5-Trimethylbenzene | 69 | 14 |
| Vinyl acetate | <28 | <8 | 1,2,4-Trimethylbenzene | 120 | 25 |
| 1,1-Dichloroethane | <1.6 | <0.4 | 1,3-Dichlorobenzene | 11 | 1.8 |
| cis-1,2-Dichloroethene | 7.5 | 1.9 | 1,4-Dichlorobenzene | 1.6 fb | 0.26 fb |
| Hexane | 680 | 190 | 1,2,3-Trimethylbenzene | 66 | 13 |
| Chloroform | 2,700 ve | 560 ve | 1,2-Dichlorobenzene | <2.4 | <0.4 |
| 2-Butanone (MEK) | 65 | 22 | 1,2,4-Trichlorobenzene | <3 | <0.4 |
| 1,2-Dichloroethane (EDC) | 0.79 | 0.20 | Naphthalene | 65 | 12 |
| 1,1,1-Trichloroethane | <2.2 | <0.4 | Hexachlorobutadiene | 2.9 | 0.28 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | LOC 16 | Client: | Floyd-Snider |
| Date Received: | 05/10/18 | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | 05/08/18 | Lab ID: | 805181-04 1/40 |
| Date Analyzed: | 05/18/18 | Data File: | 051806.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | ppbv |
|---|---|---|
| Propene | 3,300 | 1,900 |
| Isobutene | 2,200 | 960 |
| Pentane | 740 | 250 |
| Carbon disulfide | 850 | 270 |
| Chloroform | 3,100 | 620 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55 - Taylor Way, F&BI 805181 |
| Date Collected: | Not Applicable | Lab ID: | 08-1000 mb |
| Date Analyzed: | 05/14/18 | Data File: | 051406.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MP |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <1.7 | <1 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <0.78 | <0.2 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 ca | <25 ca | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.13 lc | 0.025 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 05/23/18
Date Received: 05/10/18
Project: Ave 55 - Taylor Way, F&BI 805181

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 230 | 97 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 350 | 107 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 251 | 112 | 70-130 |

Date of Report: 05/23/18
Date Received: 05/10/18
Project: Ave 55 - Taylor Way, F&BI 805181

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 10 | 86 | 70-130 |
| Propene | ppbv | 10 | 95 | 70-130 |
| Dichlorodifluoromethane | ppbv | 10 | 87 | 70-130 |
| Chloromethane | ppbv | 10 | 91 | 70-130 |
| F-114 | ppbv | 10 | 92 | 70-130 |
| Isobutene | ppbv | 10 | 106 | 70-130 |
| Acetaldehyde | ppbv | 10 | 124 | 70-130 |
| Vinyl chloride | ppbv | 10 | 95 | 70-130 |
| 1,3-Butadiene | ppbv | 10 | 96 | 70-130 |
| Bromomethane | ppbv | 10 | 112 | 70-130 |
| Chloroethane | ppbv | 10 | 99 | 70-130 |
| Ethanol | ppbv | 10 | 104 | 70-130 |
| Acetonitrile | ppbv | 10 | 107 | 70-130 |
| Acrolein | ppbv | 10 | 95 | 70-130 |
| Acrylonitrile | ppbv | 10 | 95 | 70-130 |
| Pentane | ppbv | 10 | 96 | 70-130 |
| Trichlorofluoromethane | ppbv | 10 | 95 | 70-130 |
| Acetone | ppbv | 10 | 92 | 70-130 |
| 2-Propanol | ppbv | 10 | 98 | 70-130 |
| Isoprene | ppbv | 10 | 92 | 70-130 |
| Iodomethane | ppbv | 10 | 100 | 70-130 |
| 1,1-Dichloroethene | ppbv | 10 | 99 | 70-130 |
| Methacrolein | ppbv | 10 | 97 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 10 | 102 | 70-130 |
| Cyclopentane | ppbv | 10 | 108 | 70-130 |
| Methyl Vinyl Ketone | ppbv | 10 | 113 | 70-130 |
| Butanal | ppbv | 10 | 116 | 70-130 |
| Methylene chloride | ppbv | 10 | 84 | 70-130 |
| CFC-113 | ppbv | 10 | 99 | 70-130 |
| Carbon disulfide | ppbv | 10 | 98 | 70-130 |
| Methyl t-butyl ether | ppbv | 10 | 102 | 70-130 |
| Vinyl acetate | ppbv | 10 | 95 | 70-130 |
| 1,1-Dichloroethane | ppbv | 10 | 104 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 10 | 105 | 70-130 |
| Hexane | ppbv | 10 | 100 | 70-130 |
| Chloroform | ppbv | 10 | 99 | 70-130 |
| 2-Butanone (MEK) | ppbv | 10 | 104 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 10 | 102 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 10 | 105 | 70-130 |
| 1-Butanol | ppbv | 10 | 113 | 70-130 |
| Carbon tetrachloride | ppbv | 10 | 108 | 70-130 |

Date of Report: 05/23/18
Date Received: 05/10/18
Project: Ave 55 - Taylor Way, F&BI 805181

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (Continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ppbv | 10 | 102 | 70-130 |
| Cyclohexane | ppbv | 10 | 103 | 70-130 |
| 2-Pentanone | ppbv | 10 | 95 | 70-130 |
| 3-Pentanone | ppbv | 10 | 105 | 70-130 |
| Pentanal | ppbv | 10 | 100 | 70-130 |
| 1,2-Dichloropropane | ppbv | 10 | 101 | 70-130 |
| 1,4-Dioxane | ppbv | 10 | 95 | 70-130 |
| Bromodichloromethane | ppbv | 10 | 106 | 70-130 |
| Trichloroethene | ppbv | 10 | 102 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 10 | 102 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 10 | 98 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 10 | 99 | 70-130 |
| Toluene | ppbv | 10 | 101 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 10 | 101 | 70-130 |
| 3-Hexanone | ppbv | 10 | 108 | 70-130 |
| 2-Hexanone | ppbv | 10 | 104 | 70-130 |
| Hexanal | ppbv | 10 | 108 | 70-130 |
| Tetrachloroethene | ppbv | 10 | 105 | 70-130 |
| Dibromochloromethane | ppbv | 10 | 114 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 10 | 108 | 70-130 |
| Chlorobenzene | ppbv | 10 | 103 | 70-130 |
| Ethylbenzene | ppbv | 10 | 103 | 70-130 |
| 1,1,2,2-Tetrachloroethane | ppbv | 10 | 107 | 70-130 |
| m,p-Xylene | ppbv | 20 | 105 | 70-130 |
| o-Xylene | ppbv | 10 | 107 | 70-130 |
| Styrene | ppbv | 10 | 106 | 70-130 |
| Bromoform | ppbv | 10 | 118 | 70-130 |
| Benzyl chloride | ppbv | 10 | 118 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 10 | 99 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 10 | 99 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 10 | 105 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 10 | 105 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 10 | 113 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 10 | 105 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 10 | 93 | 70-130 |
| Naphthalene | ppbv | 10 | 96 | 70-130 |
| Hexachlorobutadiene | ppbv | 10 | 98 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

605181

# SAMPLE CHAIN OF CUSTODY

ME 05/10/18

Page # 1 of 1

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Ste 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Arc 55 – Taylor Way

PO #

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | (see SAP) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AMBIENT | 01 | 29229 | 4hr | 5/8/18 | 30 | 0934 | 8 | 1254 | | | X | | no He detection |
| LOC 09 | 02 | ~~2435~~ 2436 | 109 | ↓ | 30 | 1133 | 3 | 1142 | | | X | | |
| LOC 109 | 03 | 3674 | 231 | | 30 | ~~1158~~ 1202 | 3 | 1209 | | | X | | |
| LOC 16 | 04 | ~~2436~~ 2435 | 111 | | 30 | 1220 | 21 | 1235 | | | X | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Samples received at 17 °C |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kristin Andrisan | F5 | 5/9/18 | 0930 |
| Received by: | Elizabeth Webber-Bz | F5BI | 5/10/18 | 1045 |
| Relinquished by: | | | | |
| Received by: | | | | |

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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October 8, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the additional results from the testing of material submitted on September 12, 2018 from the Ave 55-Taylor Way, F&BI 809188 project. There are 5 pages included in this report.

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
FDS1008R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55-Taylor Way, F&BI 809188 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 809188 -01 | VP-1-091218 |
| 809188 -02 | VP-2-091218 |
| 809188 -03 | VP-2-091218 Dup |
| 809188 -04 | VP-3-091218 |
| 809188 -05 | VP-5-091218 |
| 809188 -06 | VP-7-091218 |
| 809188 -07 | VP-9-091218 |
| 809188 -08 | VP-4-091218 |
| 809188 -09 | VP-6-091218 |
| 809188 -10 | VP-8-091218 |
| 809188 -11 | VP-10-091218 |
| 809188 -12 | VP-14-091218 |
| 809188 -13 | VP-13-091218 |
| 809188 -14 | VP-11-091218 |
| 809188 -15 | VP-12-091218 |
| 809188 -16 | VP-2B-091218 |

All quality control requirements were acceptable.

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188
Date Extracted: 10/02/18
Date Analyzed: 10/02/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| VP-1-091218<br>809188-01 | <0.6 |
| VP-2-091218<br>809188-02 | <0.6 |
| VP-2-091218 Dup<br>809188-03 | <0.6 |
| VP-3-091218<br>809188-04 | <0.6 |
| VP-5-091218<br>809188-05 | <0.6 |
| VP-7-091218<br>809188-06 | <0.6 |
| VP-9-091218<br>809188-07 | <0.6 |
| VP-4-091218<br>809188-08 | <0.6 |
| VP-6-091218<br>809188-09 | <0.6 |
| VP-8-091218<br>809188-10 | <0.6 |
| VP-10-091218<br>809188-11 | <0.6 |
| VP-14-091218<br>809188-12 | <0.6 |

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188
Date Extracted: 10/02/18
Date Analyzed: 10/02/18

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

| Sample ID<br>Laboratory ID | Helium |
|---|---|
| VP-13-091218<br>809188-13 | <0.6 |
| VP-11-091218<br>809188-14 | <0.6 |
| VP-12-091218<br>809188-15 | <0.6 |
| Method Blank | <0.6 |

Date of Report: 10/08/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 809188-13 (Duplicate)

| Analyte | Sample Result (%) | Duplicate Result (%) | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|
| Helium | <0.6 | <0.6 | nm | 0-50 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18

Page # 1 of 3

Report To: Tom Colligan
Company: Floyd Snider
Address: 601 Union St, Suite 600
City, State, ZIP: Seattle, WA 98101
Phone: 206-292-2078 Email: tom.colligan@floydsnider.com

SAMPLERS (signature): Kora, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) | Helium | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-1-091218 | 01 | 3252 | 31 | 9/12/18 | 30 | 0919 | 4.5 | 0926 | X | X | X | | *See table 3 for full |
| VP-2-091218 | 02 | 3378 | 02 | | 30 | 0957 | 4.5 | 1010 1010 | | | | | list of VOCs |
| VP-2-091218 Dup | 03 | 3258 | 102 | | 30 | 0957 | 4.5 | 1005 1010 | | | | | |
| VP-3-091218 | 04 | 2301 | 106 | | 30 | 10:47 | 4.5 | 10:51 | | | | | |
| ~~VP-4-091218~~ | — | ~~3672~~ | ~~256~~ | | | | | | | | | | |
| VP-5-091218 | 05 | 2435 | 07 | | 29.5 | 11:46 | 4.5 4.5 11:50 | 11:50 | | | | | |
| VP-7-091218 | 06 | 3251 | 109 | | 28.5 | 12:28 | 4.5 | 12:32 | | | | | |
| VP-9-091218 | 07 | 2297 | 231 | | 30 | 13:36 | 4.5 4.5 | 13:42 | | | | | |

Samples received at 21 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Lyon | F-S | 9/13/18 | 900 |
| 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\COCTO-15.DOC

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18



Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | VPH (MA-APH) | Helium TO-15sc Mod | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-091218 | 08 | 3672 | 252 | 9/12/18 | 28 | 1117 | 4.5 | 1124 | X | X | X | | *See table 3 for full |
| VP-6-091218 | 09 | 2300 | 108 | 9/12/18 | 30 | 1206 | 4.5 | 1210 | | | | | list of VOCs |
| VP-8-091218 | 10 | 3669 | 105 | 9/12 | 29.5 | 1235 | 4.5 | 1239 | | | | | |
| VP-10-091218 | 11 | 3386 | 01 | 9/12 | 30 | 1353 | 4.5 | 1400 | | | | | |
| VP-14-091218 | 12 | 2298 | 201 | 9/12 | 29.5 | 1442 | 4.5 | 1448 | | | | | |
| VP-13-091218 | 13 | 3389 | 101 | 9/12 | 29.5 | 1522 | 4.5 | 1529 | ↓ | ↓ | ↓ | | ↓ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabriel Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Yamamoto | FedEx | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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*Seattle, WA 98119-2029*
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# SAMPLE CHAIN OF CUSTODY

B09188

ME 09-12-18

Page # 3 of 3

Report To Tom Colligan

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 email tom.colligan@floydsnider.com

SAMPLERS (*signature*): Kova, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| | Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) TOGS-EPH/VPH | Fielding Parameters | Archive | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VP-11-091218 | 14 | 3677 | 257 | 9/12/18 | 28.7 | 14:28 | 4.5 | 14:37 | X | X | X | | * See table 3 for full list of VOCs |
| 2 | VP-12-091218 | 15 | 2437 | 03 | ↓ | 29.1 28.7 | 15:09 | 4.5 | 15:15 | ↓ | ↓ | ↓ | | ↓ |
| 3 | VP-2B-091218 | 16 | 3674 | 111 | ↓ | 29.5 | 15:54 15:56 | 4.5 | 16:03 | ↓ | ↓ | ↓ | X | HOLD ANALYSIS |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd\|Snider | 9/12/18 | 1720 |
| Received by: | Eric Hoon | FSS | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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*3012 16th Avenue West*
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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September 28, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on September 12, 2018 from the Ave 55-Taylor Way, F&BI 809188 project. There are 38 pages included in this report.

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
FDS0928R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Ave 55-Taylor Way project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 809188 -01 | VP-1-091218 |
| 809188 -02 | VP-2-091218 |
| 809188 -03 | VP-2-091218 Dup |
| 809188 -04 | VP-3-091218 |
| 809188 -05 | VP-5-091218 |
| 809188 -06 | VP-7-091218 |
| 809188 -07 | VP-9-091218 |
| 809188 -08 | VP-4-091218 |
| 809188 -09 | VP-6-091218 |
| 809188 -10 | VP-8-091218 |
| 809188 -11 | VP-10-091218 |
| 809188 -12 | VP-14-091218 |
| 809188 -13 | VP-13-091218 |
| 809188 -14 | VP-11-091218 |
| 809188 -15 | VP-12-091218 |
| 809188 -16 | VP-2B-091218 |

The helium analysis will be sent in an additional report.

Several TO-15 and APH analytes exceeded the calibration range. The data were qualified accordingly.

Several TO15 compounds were present in the samples at a concentration less than 10 times the concentration in the method blank. The data were qualified accordingly.

Non-petroleum compounds with a Q value greater than 85 were subtracted from the APH ranges for all samples.

All quality control requirements were acceptable.

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-01 1/10 |
| Date Analyzed: | 09/20/18 | Data File: | 091930.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 105 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 11,000 |
| APH EC9-12 aliphatics | 21,000 ve |
| APH EC9-10 aromatics | 2,700 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-02 1/3.3 |
| Date Analyzed: | 09/19/18 | Data File: | 091915.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,800 |
| APH EC9-12 aliphatics | 330 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 Dup | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-03 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091916.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,000 |
| APH EC9-12 aliphatics | 310 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-04 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091917.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,100 |
| APH EC9-12 aliphatics | 180 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-05 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091918.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,400 |
| APH EC9-12 aliphatics | 360 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-06 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091919.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,900 ve |
| APH EC9-12 aliphatics | 170 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-07 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091920.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 86 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,400 |
| APH EC9-12 aliphatics | 220 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-08 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091921.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 820 |
| APH EC9-12 aliphatics | 130 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-09 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091922.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,900 |
| APH EC9-12 aliphatics | 530 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-10 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091923.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 5,900 ve |
| APH EC9-12 aliphatics | 1,100 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-11 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091924.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,200 |
| APH EC9-12 aliphatics | 360 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-12 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091925.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,600 |
| APH EC9-12 aliphatics | 520 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-13 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091926.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 87 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 800 |
| APH EC9-12 aliphatics | 150 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-14 1/4.2 |
| Date Analyzed: | 09/20/18 | Data File: | 091929.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,900 |
| APH EC9-12 aliphatics | 6,000 |
| APH EC9-10 aromatics | <100 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-15 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091927.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 820 |
| APH EC9-12 aliphatics | 180 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2B-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-16 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091928.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,300 |
| APH EC9-12 aliphatics | 420 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/19/18 | Lab ID: | 08-2081 mb |
| Date Analyzed: | 09/19/18 | Data File: | 091911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-01 1/10 |
| Date Analyzed: | 09/20/18 | Data File: | 091930.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 113 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 8.3 | 2.3 | 1-Butanol | <61 | <20 |
| Propene | 1,300 ve | 740 ve | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | 120 | 24 | Benzene | 28 | 8.6 |
| Chloromethane | 7.3 | 3.5 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | 1,600 ve | 700 ve | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | 3.3 | 0.71 |
| 1,3-Butadiene | 4.7 | 2.1 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <16 | <4 | Bromodichloromethane | 5.8 | 0.86 |
| Chloroethane | 4.9 | 1.8 | Trichloroethene | 9.1 | 1.7 |
| Ethanol | <75 | <40 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | 27 | 16 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 62 | 16 |
| Pentane | 360 | 120 | 1,1,2-Trichloroethane | 1.0 | 0.19 |
| Trichlorofluoromethane | 880 | 160 | 3-Hexanone | <41 | <10 |
| Acetone | 1,300 ve | 560 ve | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 17 | 5.9 | Tetrachloroethene | 17 | 2.5 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | 75 | 17 |
| Cyclopentane | <2.9 | <1 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | 270 | 61 |
| Butanal | <29 | <10 | o-Xylene | 120 | 28 |
| Methylene chloride | <870 | <250 | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | 2.3 | 0.45 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | 130 | 27 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | 420 | 85 |
| 1,1-Dichloroethane | 6.0 | 1.5 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 140 | 39 | 1,2,3-Trimethylbenzene | 130 | 27 |
| Chloroform | 6.9 | 1.4 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | 94 | 32 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | 5.8 | 1.4 | Naphthalene | 33 | 6.3 |
| 1,1,1-Trichloroethane | 15 | 2.7 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-02 1/3.3 |
| Date Analyzed: | 09/19/18 | Data File: | 091915.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 3.7 | 1.0 | 1-Butanol | 53 | 17 |
| Propene | 410 ve | 240 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 49 | 9.9 | Benzene | 7.0 | 2.2 |
| Chloromethane | 4.4 | 2.1 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 180 | 77 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 80 | 44 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.1 | 0.24 |
| 1,3-Butadiene | 11 | 4.8 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.5 | 0.57 | Trichloroethene | 5.4 | 1.0 |
| Ethanol | 68 | 36 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 6.9 | 4.1 | 4-Methyl-2-pentanone | 26 | 6.2 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 5.8 | 2.7 | Toluene | 11 | 2.9 |
| Pentane | 150 | 52 | 1,1,2-Trichloroethane | 0.65 | 0.12 |
| Trichlorofluoromethane | 560 | 99 | 3-Hexanone | <14 | <3.3 |
| Acetone | 91 | 38 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | 300 | 120 | Hexanal | <14 | <3.3 |
| Isoprene | 7.0 | 2.5 | Tetrachloroethene | 2.6 | 0.38 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.3 fb | 0.34 fb | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.8 | 0.64 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 8.4 | 1.9 |
| Butanal | <9.7 | <3.3 | o-Xylene | 3.0 | 0.70 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 3.3 fb | 0.43 fb | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.6 | 0.64 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 69 | 20 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.9 | 0.59 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.59 | 0.15 | Naphthalene | 1.2 | 0.23 fb |
| 1,1,1-Trichloroethane | 16 | 2.9 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-091218 Dup | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-03 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091916.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 4.1 | 1.2 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 37 | 7.4 | Benzene | 5.2 | 1.6 |
| Chloromethane | 3.3 | 1.6 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 130 | 56 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 66 | 36 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 0.79 | 0.17 |
| 1,3-Butadiene | 6.3 | 2.8 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.1 | 0.42 | Trichloroethene | 2.4 fb | 0.45 fb |
| Ethanol | 52 | 28 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 4.0 | 1.8 | Toluene | 7.9 | 2.1 |
| Pentane | 110 | 37 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 70 | 3-Hexanone | <14 | <3.3 |
| Acetone | 160 | 67 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 4.6 | 1.6 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.8 | 0.43 |
| Cyclopentane | 20 | 6.9 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 5.3 | 1.2 |
| Butanal | <9.7 | <3.3 | o-Xylene | 1.8 | 0.42 |
| Methylene chloride | 410 | 120 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 1.9 | 0.47 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 71 | 20 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.9 | 0.39 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.39 | 0.096 | Naphthalene | 0.59 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 11 | 2.0 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-04 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091917.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 35 | 7.1 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 36 | 16 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 49 | 27 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 1.6 | 0.71 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | <0.89 | <0.16 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.8 | 0.48 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 210 | 37 | 3-Hexanone | <14 | <3.3 |
| Acetone | 28 | 12 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 8.5 | 1.3 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 16 | 4.6 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.69 | 0.14 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.57 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 5.0 | 0.91 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-05 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091918.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.5 | 0.71 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 39 | 7.9 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 56 | 25 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 45 | 25 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.5 | 0.32 |
| 1,3-Butadiene | 2.4 | 1.1 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 5.8 | 1.1 |
| Ethanol | 33 | 18 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 4.9 | 1.3 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 69 | 3-Hexanone | <14 | <3.3 |
| Acetone | 100 | 42 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | 130 | 52 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.7 | 0.40 |
| Cyclopentane | 1.2 | 0.43 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 7.4 | 1.7 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.4 | 0.54 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 23 | 6.5 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.97 | 0.20 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.16 | 0.040 | Naphthalene | 1.0 fb | 0.20 fb |
| 1,1,1-Trichloroethane | 8.5 | 1.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-06 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091919.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 3.0 | 0.85 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 91 | 18 | Benzene | 1.3 | 0.40 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 610 ve | 270 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 100 | 58 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 5.0 | 1.1 |
| 1,3-Butadiene | 25 | 11 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 0.93 | 0.35 | Trichloroethene | 2.8 | 0.51 |
| Ethanol | 38 | 20 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 15 | 8.8 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 9.2 | 4.2 | Toluene | 3.7 | 0.98 |
| Pentane | 55 | 19 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2,200 ve | 400 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 170 | 70 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 1.0 | 0.36 | Tetrachloroethene | 3.1 | 0.46 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 2.1 | 0.52 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | 19 | 6.6 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.8 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 1.6 | 0.37 |
| Methylene chloride | 470 | 140 | Styrene | <2.8 | <0.66 |
| CFC-113 | 4.6 fb | 0.60 fb | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 4.9 | 1.2 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 33 | 9.4 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.6 | 0.54 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.2 | 0.29 | Naphthalene | 0.74 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 23 | 4.1 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-07 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091920.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 3.8 | 0.77 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 2.2 fb | 0.41 fb |
| Ethanol | 28 | 15 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 5.4 | 1.4 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 6.1 | 1.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 48 | 20 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.6 | 0.53 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.6 | 0.59 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 10 | 2.3 |
| Butanal | <9.7 | <3.3 | o-Xylene | 3.0 | 0.70 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 13 | 3.8 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.0 | 0.61 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.6 fb | 0.31 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-08 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091921.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.5 | 0.42 | 1-Butanol | 54 | 18 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 17 | 3.5 | Benzene | 1.1 | 0.34 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 34 | 19 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 6.8 | 1.3 |
| Ethanol | 46 | 24 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.7 fb | 0.44 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 150 | 27 | 3-Hexanone | <14 | <3.3 |
| Acetone | 130 | 56 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 5.3 | 0.78 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 13 | 3.6 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.5 | 0.51 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.71 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 4.0 | 0.73 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-09 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091922.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 1.8 | 0.52 | 1-Butanol | <20 | <6.6 |
| Propene | 470 ve | 280 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 74 | 15 | Benzene | 20 | 6.2 |
| Chloromethane | 3.2 | 1.5 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 700 ve | 310 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 0.96 | 0.21 |
| 1,3-Butadiene | 29 | 13 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 1.1 | 0.41 | Trichloroethene | 2.8 | 0.53 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 15 | 8.9 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 11 | 5.2 | Toluene | 17 | 4.4 |
| Pentane | 240 | 80 | 1,1,2-Trichloroethane | 0.27 fb | 0.049 fb |
| Trichlorofluoromethane | 1,100 ve | 190 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 210 | 89 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 7.3 | 2.6 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.6 | 0.40 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 7.7 | 1.8 |
| Cyclopentane | 20 | 7.0 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 14 | 3.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 4.9 | 1.1 |
| Methylene chloride | <290 | <82 | Styrene | 3.4 | 0.81 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 1.4 | 0.35 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 100 | 29 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.1 | 0.43 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 11 | 3.7 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.1 | 0.26 | Naphthalene | 0.88 fb | 0.17 fb |
| 1,1,1-Trichloroethane | 11 | 2.0 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-10 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091923.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 11 | 3.1 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 57 | 12 | Benzene | 26 | 8.0 |
| Chloromethane | 4.0 | 1.9 | Cyclohexane | 36 | 10 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 1,200 ve | 510 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | 0.92 | 0.36 | 1,2-Dichloropropane | 2.9 | 0.62 |
| 1,3-Butadiene | 47 | 21 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.9 | 1.5 | Trichloroethene | 4.4 | 0.81 |
| Ethanol | 32 | 17 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 39 | 23 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 25 | 12 | Toluene | 24 | 6.5 |
| Pentane | 470 | 160 | 1,1,2-Trichloroethane | 0.83 | 0.15 |
| Trichlorofluoromethane | 960 ve | 170 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 1,300 ve | 540 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 16 | 5.6 | Tetrachloroethene | 5.4 | 0.80 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 3.0 | 0.76 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 15 | 3.4 |
| Cyclopentane | 72 | 25 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | 22 | 7.7 | m,p-Xylene | 13 | 3.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.3 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 9.4 | 1.2 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | 27 | 8.7 | Benzyl chloride | 0.29 fb | 0.056 fb |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 9.2 | 2.3 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 79 | 22 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 4.7 | 0.96 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 21 | 7.1 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 2.2 | 0.54 | Naphthalene | 1.5 fb | 0.29 fb |
| 1,1,1-Trichloroethane | 20 | 3.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-11 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091924.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 5.0 | 1.4 | 1-Butanol | 59 | 20 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 7.8 | 1.6 | Benzene | <1.1 | <0.33 |
| Chloromethane | 0.88 | 0.43 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 160 | 91 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.088 fb | 0.040 fb | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | <0.89 | <0.16 |
| Ethanol | 41 | 22 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.6 fb | 0.43 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 120 | 21 | 3-Hexanone | <14 | <3.3 |
| Acetone | 30 | 13 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 14 | 3.9 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.7 | 0.77 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.1 fb | 0.20 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-12 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091925.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.9 | 0.82 | 1-Butanol | 21 | 7.0 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | 62 | 9.9 |
| Dichlorodifluoromethane | 59 | 12 | Benzene | 3.6 | 1.1 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 410 ve | 180 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 110 | 59 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 16 | 7.2 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 94 | 18 |
| Ethanol | 71 | 38 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | 14 | 8.2 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | 16 | 7.6 | Toluene | 9.3 | 2.5 |
| Pentane | 260 | 87 | 1,1,2-Trichloroethane | 4.9 | 0.89 |
| Trichlorofluoromethane | 13 | 2.3 | 3-Hexanone | <14 | <3.3 |
| Acetone | 99 | 42 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 47 | 17 | Tetrachloroethene | 31 | 4.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 10 | 2.6 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.6 | 0.36 |
| Cyclopentane | 28 | 9.7 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.4 | 1.0 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.2 | 0.50 |
| Methylene chloride | 300 | 86 | Styrene | <2.8 | <0.66 |
| CFC-113 | 18 | 2.3 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.4 | 0.59 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 120 | 34 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 4.3 | 0.87 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.13 fb | 0.033 fb | Naphthalene | 1.1 fb | 0.20 fb |
| 1,1,1-Trichloroethane | 6.9 | 1.3 | Hexachlorobutadiene | 2.6 | 0.24 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-13 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091926.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 7.0 | 2.0 | 1-Butanol | 100 | 33 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | 6.2 | 0.99 |
| Dichlorodifluoromethane | 6.5 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | 2.0 | 0.98 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.095 fb | 0.043 fb | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 6.5 | 1.2 |
| Ethanol | 82 | 44 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 1.4 fb | 0.38 fb |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 45 | 8.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 44 | 18 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 7.6 | 1.1 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | 2,200 ve | 630 ve | Styrene | <2.8 | <0.66 |
| CFC-113 | 3.3 | 0.43 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 38 | 11 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 5.2 | 1.1 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.54 fb | 0.10 fb |
| 1,1,1-Trichloroethane | 2.1 fb | 0.39 fb | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-14 1/4.2 |
| Date Analyzed: | 09/20/18 | Data File: | 091929.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 4.0 | 1.1 | 1-Butanol | <25 | <8.4 |
| Propene | <2.9 | <1.7 | Carbon tetrachloride | <2.6 | <0.42 |
| Dichlorodifluoromethane | 6.0 | 1.2 | Benzene | 11 | 3.4 |
| Chloromethane | <0.87 | <0.42 | Cyclohexane | 31 fb | 9.1 fb |
| F-114 | <2.9 | <0.42 | 2-Pentanone | <15 | <4.2 |
| Isobutene | 95 | 41 | 3-Pentanone | <15 | <4.2 |
| Acetaldehyde | 320 | 180 | Pentanal | <15 | <4.2 |
| Vinyl chloride | <1.1 | <0.42 | 1,2-Dichloropropane | <0.97 | <0.21 |
| 1,3-Butadiene | 3.9 | 1.8 | 1,4-Dioxane | <1.5 | <0.42 |
| Bromomethane | <6.5 | <1.7 | Bromodichloromethane | 3.2 | 0.48 |
| Chloroethane | <1.1 | <0.42 | Trichloroethene | 28 | 5.2 |
| Ethanol | 55 | 29 | cis-1,3-Dichloropropene | <1.9 | <0.42 |
| Acetonitrile | <7.1 | <4.2 | 4-Methyl-2-pentanone | <17 | <4.2 |
| Acrolein | <3.9 | <1.7 | trans-1,3-Dichloropropene | <1.9 | <0.42 |
| Acrylonitrile | <0.91 | <0.42 | Toluene | 25 | 6.5 |
| Pentane | 77 | 26 | 1,1,2-Trichloroethane | 3.8 | 0.69 |
| Trichlorofluoromethane | 5.9 | 1.0 | 3-Hexanone | <17 | <4.2 |
| Acetone | <20 | <8.4 | 2-Hexanone | <17 | <4.2 |
| 2-Propanol | <36 | <15 | Hexanal | <17 | <4.2 |
| Isoprene | 1.2 | 0.44 | Tetrachloroethene | 14 | 2.1 |
| Iodomethane | <2.4 | <0.42 | Dibromochloromethane | <0.36 | <0.042 |
| 1,1-Dichloroethene | 6.8 | 1.7 | 1,2-Dibromoethane (EDB) | <0.32 | <0.042 |
| Methacrolein | <12 | <4.2 | Chlorobenzene | <1.9 | <0.42 |
| trans-1,2-Dichloroethene | 2.0 | 0.50 | Ethylbenzene | 3.3 | 0.77 |
| Cyclopentane | <1.2 | <0.42 | 1,1,2,2-Tetrachloroethane | <0.58 | <0.084 |
| Methyl vinyl ketone | <12 | <4.2 | m,p-Xylene | 10 | 2.3 |
| Butanal | <12 | <4.2 | o-Xylene | 8.7 | 2.0 |
| Methylene chloride | <360 | <100 | Styrene | <3.6 | <0.84 |
| CFC-113 | 12 | 1.6 | Bromoform | <8.7 | <0.84 |
| Carbon disulfide | <26 | <8.4 | Benzyl chloride | 0.63 | 0.12 |
| Methyl t-butyl ether (MTBE) | <7.6 | <2.1 | 1,3,5-Trimethylbenzene | <10 | <2.1 |
| Vinyl acetate | <30 | <8.4 | 1,2,4-Trimethylbenzene | <10 | <2.1 |
| 1,1-Dichloroethane | 7.5 | 1.9 | 1,3-Dichlorobenzene | <2.5 | <0.42 |
| cis-1,2-Dichloroethene | 4.5 | 1.1 | 1,4-Dichlorobenzene | <1 | <0.17 |
| Hexane | 33 | 9.4 | 1,2,3-Trimethylbenzene | <10 | <2.1 |
| Chloroform | 0.45 | 0.092 | 1,2-Dichlorobenzene | <2.5 | <0.42 |
| 2-Butanone (MEK) | <12 | <4.2 | 1,2,4-Trichlorobenzene | <3.1 | <0.42 |
| 1,2-Dichloroethane (EDC) | 0.27 | 0.067 | Naphthalene | 1.7 fb | 0.33 fb |
| 1,1,1-Trichloroethane | 9.1 | 1.7 | Hexachlorobutadiene | 0.90 fb | 0.084 fb |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-091218 | Client: | Floyd-Snider |
| Date Received: | 09/12/18 | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/12/18 | Lab ID: | 809188-15 1/3.3 |
| Date Analyzed: | 09/20/18 | Data File: | 091927.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 2.3 | 0.65 | 1-Butanol | <20 | <6.6 |
| Propene | 2.7 | 1.6 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 4.3 | 0.88 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | 0.088 | 0.040 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.5 fb | 0.28 fb |
| Ethanol | 43 | 23 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.3 | 0.60 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 33 | 5.9 | 3-Hexanone | <14 | <3.3 |
| Acetone | 25 | 11 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.0 | 0.44 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 2.9 | 0.67 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.7 | 0.75 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 1.1 fb | 0.21 fb |
| 1,1,1-Trichloroethane | 2.1 fb | 0.38 fb | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Ave 55-Taylor Way, F&BI 809188 |
| Date Collected: | 09/19/18 | Lab ID: | 08-2081 mb |
| Date Analyzed: | 09/19/18 | Data File: | 091911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | bat |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.14 lc | 0.026 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: 809150-01 1/5 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 30) |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 3,400 | 3,300 | 3 |
| APH EC9-12 aliphatics | ug/m3 | 1,000 | 1,000 | 0 |
| APH EC9-10 aromatics | ug/m3 | 300 | 320 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 45 | 80 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 45 | 116 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 45 | 94 | 70-130 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 114 | 70-130 |
| Propene | ppbv | 5 | 101 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 108 | 70-130 |
| Chloromethane | ppbv | 5 | 102 | 70-130 |
| F-114 | ppbv | 5 | 111 | 70-130 |
| Isobutene | ppbv | 5 | 105 | 70-130 |
| Acetaldehyde | ppbv | 5 | 124 | 70-130 |
| Vinyl chloride | ppbv | 5 | 107 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 116 | 70-130 |
| Bromomethane | ppbv | 5 | 118 | 70-130 |
| Chloroethane | ppbv | 5 | 104 | 70-130 |
| Ethanol | ppbv | 5 | 91 | 70-130 |
| Acetonitrile | ppbv | 5 | 98 | 70-130 |
| Acrolein | ppbv | 5 | 103 | 70-130 |
| Acrylonitrile | ppbv | 5 | 123 | 70-130 |
| Pentane | ppbv | 5 | 107 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 111 | 70-130 |
| Acetone | ppbv | 5 | 102 | 70-130 |
| 2-Propanol | ppbv | 5 | 111 | 70-130 |
| Isoprene | ppbv | 5 | 110 | 70-130 |
| Iodomethane | ppbv | 5 | 107 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 108 | 70-130 |
| Methacrolein | ppbv | 5 | 102 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 108 | 70-130 |
| Cyclopentane | ppbv | 5 | 112 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 120 | 70-130 |
| Butanal | ppbv | 5 | 97 | 70-130 |
| Methylene chloride | ppbv | 5 | 82 | 70-130 |
| CFC-113 | ppbv | 5 | 107 | 70-130 |
| Carbon disulfide | ppbv | 5 | 100 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 111 | 70-130 |
| Vinyl acetate | ppbv | 5 | 106 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 111 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 106 | 70-130 |
| Hexane | ppbv | 5 | 115 | 70-130 |
| Chloroform | ppbv | 5 | 113 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 109 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 113 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 115 | 70-130 |

Date of Report: 09/28/18
Date Received: 09/12/18
Project: Ave 55-Taylor Way, F&BI 809188

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| 1-Butanol | ppbv | 5 | 96 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 108 | 70-130 |
| Benzene | ppbv | 5 | 110 | 70-130 |
| Cyclohexane | ppbv | 5 | 103 | 70-130 |
| 2-Pentanone | ppbv | 5 | 106 | 70-130 |
| 3-Pentanone | ppbv | 5 | 113 | 70-130 |
| Pentanal | ppbv | 5 | 94 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 103 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 111 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 110 | 70-130 |
| Trichloroethene | ppbv | 5 | 101 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 99 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 96 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 105 | 70-130 |
| Toluene | ppbv | 5 | 98 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 104 | 70-130 |
| 3-Hexanone | ppbv | 5 | 101 | 70-130 |
| 2-Hexanone | ppbv | 5 | 100 | 70-130 |
| Hexanal | ppbv | 5 | 98 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 101 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 119 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 111 | 70-130 |
| Chlorobenzene | ppbv | 5 | 106 | 70-130 |
| Ethylbenzene | ppbv | 5 | 109 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 118 | 70-130 |
| m,p-Xylene | ppbv | 10 | 116 | 70-130 |
| o-Xylene | ppbv | 5 | 123 | 70-130 |
| Styrene | ppbv | 5 | 109 | 70-130 |
| Bromoform | ppbv | 5 | 114 | 70-130 |
| Benzyl chloride | ppbv | 5 | 126 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 110 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 105 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 114 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 124 | 70-130 |
| 1,2,3-Trimethylbenzen e | ppbv | 5 | 107 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 117 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 101 | 70-130 |
| Naphthalene | ppbv | 5 | 100 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 108 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18

Page # 1 of 3

Report To: Tom Colligan
Company: Floyd Snider
Address: 601 Union St, Suite 600
City, State, ZIP: Seattle, WA 98101
Phone: 206-292-2078 Email: tom.colligan@floydsnider.com

SAMPLERS (signature): Kora, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) | Helium | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-1-091218 | 01 | 3252 | 31 | 9/12/18 | 30 | 0919 | 4.5 | 0926 | X | X | X | | *See table 3 for full |
| VP-2-091218 | 02 | 3378 | 02 | | 30 | 0957 | 4.5 | 1010 1010 | | | | | list of VOCs |
| VP-2-091218 Dup | 03 | 3258 | 102 | | 30 | 0957 | 4.5 | 1005 1010 | | | | | |
| VP-3-091218 | 04 | 2301 | 106 | | 30 | 10:47 | 4.5 | 10:51 | | | | | |
| ~~VP-4-091218~~ | — | ~~3672~~ | ~~256~~ | | | | | | | | | | |
| VP-5-091218 | 05 | 2435 | 07 | | 29.5 | 11:46 | 4.5 4.5 11:50 | 11:50 | | | | | |
| VP-7-091218 | 06 | 3251 | 109 | | 28.5 | 12:28 | 4.5 | 12:32 | | | | | |
| VP-9-091218 | 07 | 2297 | 231 | | 30 | 13:36 | 4.5 4.5 | 13:42 | | | | | |

Samples received at 21 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Lyon | F-S | 9/13/18 | 900 |
| 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\COCTO-15.DOC

809188

# SAMPLE CHAIN OF CUSTODY

ME 09-12-18



Report To Tom Colligan
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL
- ☐ Indoor Air
- ☐ Deep Soil Gas
- ☑ Sub Slab/Soil Gas
- ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | VPH (MA-APH) | Helium TO-15sc Mod | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-091218 | 08 | 3672 | 252 | 9/12/18 | 28 | 1117 | 4.5 | 1124 | X | X | X | | *See table 3 for full |
| VP-6-091218 | 09 | 2300 | 108 | 9/12/18 | 30 | 1206 | 4.5 | 1210 | | | | | list of VOCs |
| VP-8-091218 | 10 | 3669 | 105 | 9/12 | 29.5 | 1235 | 4.5 | 1239 | | | | | |
| VP-10-091218 | 11 | 3386 | 01 | 9/12 | 30 | 1353 | 4.5 | 1400 | | | | | |
| VP-14-091218 | 12 | 2298 | 201 | 9/12 | 29.5 | 1442 | 4.5 | 1448 | | | | | |
| VP-13-091218 | 13 | 3389 | 101 | 9/12 | 29.5 | 1522 | 4.5 | 1529 | ↓ | ↓ | ↓ | | ↓ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabriel Cisneros | Floyd Snider | 9/12/18 | 1720 |
| Received by: | Eric Yamamoto | FedEx | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

# SAMPLE CHAIN OF CUSTODY

B09188

ME 09-12-18

Page # 3 of 3

Report To Tom Colligan

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 email tom.colligan@floydsnider.com

SAMPLERS (*signature*): Kova, Gabe

PROJECT NAME: Ave 55 - Taylor Way

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| | Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | APH (MA-APH) TOGS-EPH/VPH | Fielding Parameters | Archive | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VP-11-091218 | 14 | 3677 | 257 | 9/12/18 | 28.7 | 14:28 | 4.5 | 14:37 | X | X | X | | * See table 3 for full list of VOCs |
| 2 | VP-12-091218 | 15 | 2437 | 03 | ↓ | 29.1 28.7 | 15:09 | 4.5 | 15:15 | ↓ | ↓ | ↓ | | ↓ |
| 3 | VP-2B-091218 | 16 | 3674 | 111 | ↓ | 29.5 | 15:54 15:56 | 4.5 | 16:03 | ↓ | ↓ | ↓ | X | HOLD ANALYSIS |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gabe Cisneros | Floyd\|Snider | 9/12/18 | 1720 |
| Received by: | Eric Hoon | FSS | 9/12/18 | 1720 |
| Relinquished by: | | | | |
| Received by: | | | | |

*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.
Arina Podnozova, B.S.
Eric Young, B.S.

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

November 16, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the additional results from the testing of material submitted on October 24, 2018 from the Taylor Way-Ave 55, F&BI 810462 project. There are 20 pages included in this report.

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: Gabe Cisneros
FDS1116R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 24, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor Way-Ave 55, F&BI 810462 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 810462 -01 | VP-2-102418 |
| 810462 -02 | VP-1-102418 |
| 810462 -03 | VP-1-102418 Dup |
| 810462 -04 | VP-3-102418 |
| 810462 -05 | VP-5-102418 |
| 810462 -06 | VP-8-102418 |
| 810462 -07 | VP-11-102418 |
| 810462 -08 | VP-9-102418 |
| 810462 -09 | VP-4-102418 |
| 810462 -10 | VP-6-102418 |
| 810462 -11 | VP-7-102418 |
| 810462 -12 | VP-12-102418 |
| 810462 -13 | VP-13-102418 |
| 810462 -14 | VP-14-102418 |
| 810462 -15 | VP-10-102418 |
| 810462 -16 | VP-LB-102418 |

An opening APH calibration standard was not analyzed on 10/26/18. The data were qualified accordingly. A full list TO15 calibration standard was analyzed and was within acceptance limits.

The APH EC5-8 aliphatics concentration for sample VP-6-102418 exceeded the calibration range. The data were flagged accordingly.

Non-petroleum compounds with Q values over 85 were subtracted from the APH EC5-8 and EC9-12 aliphatics ranges, if present.

All other quality control requirements were acceptable.

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-01 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102608.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 90 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,200 ca |
| APH EC9-12 aliphatics | 340 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-02 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110911.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 95 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,600 |
| APH EC9-12 aliphatics | 2,000 |
| APH EC9-10 aromatics | 170 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 Dup | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-03 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110912.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 95 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,200 |
| APH EC9-12 aliphatics | 1,700 |
| APH EC9-10 aromatics | 160 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-04 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102611.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 89 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 790 |
| APH EC9-12 aliphatics | 370 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-05 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102612.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 89 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 750 ca |
| APH EC9-12 aliphatics | 370 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-06 1/5 |
| Date Analyzed: | 11/09/18 | Data File: | 110913.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 82 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 3,000 |
| APH EC9-12 aliphatics | 330 |
| APH EC9-10 aromatics | <120 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-07 1/3.3 |
| Date Analyzed: | 11/09/18 | Data File: | 110914.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | BAT/MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 87 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 1,200 |
| APH EC9-12 aliphatics | 790 |
| APH EC9-10 aromatics | <82 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-08 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102615.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 690 ca |
| APH EC9-12 aliphatics | 200 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-09 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102616.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 480 ca |
| APH EC9-12 aliphatics | 140 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-10 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102617.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 4,700 ve ca |
| APH EC9-12 aliphatics | 580 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-11 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102618.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 2,800 ca |
| APH EC9-12 aliphatics | 340 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-12 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102619.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 740 ca |
| APH EC9-12 aliphatics | 250 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-13 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102620.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 770 ca |
| APH EC9-12 aliphatics | 180 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-14 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102621.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 94 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 710 ca |
| APH EC9-12 aliphatics | 390 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-15 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102622.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 92 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 470 ca |
| APH EC9-12 aliphatics | 320 ca |
| APH EC9-10 aromatics | <82 ca |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-LB-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-16 1/10 |
| Date Analyzed: | 11/03/18 | Data File: | 110226.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 91 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | 470 |
| APH EC9-12 aliphatics | <350 |
| APH EC9-10 aromatics | <250 |

## Analysis For Volatile Compounds By Method MA-APH

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2484 mb |
| Date Analyzed: | 11/09/18 | Data File: | 110907.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | MS |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 79 | 70 | 130 |

| Compounds: | Concentration ug/m3 |
|---|---|
| APH EC5-8 aliphatics | <46 |
| APH EC9-12 aliphatics | <35 |
| APH EC9-10 aromatics | <25 |

Date of Report: 11/16/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| APH EC5-8 aliphatics | ug/m3 | 45 | 112 | 70-130 |
| APH EC9-12 aliphatics | ug/m3 | 45 | 129 | 70-130 |
| APH EC9-10 aromatics | ug/m3 | 45 | 107 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 1 of 2

Report To Tom Colligan
Company Floyd Snider
Address 601 Union St., Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-292-2078 Email tom.colligan@floydsnider.com

SAMPLERS (signature): Kara, Gabe

PROJECT NAME: Taylor Way - Ave 55

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan

TURNAROUND TIME: ☑ Standard ☐ RUSH ____ Rush charges authorized by: ____

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other ____

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | APH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-2-102418 | 01 | 3311 | 242 | 10/24/18 | 29 | 7:59 | 4.5 | 8:05 | X | X | X | (X) | (X) - per GC 11/8/18 MC |
| VP-4-102418 | 02 | 3257 | 252 | | 28 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-1-102418 DUP | 03 | 3390 | 256 | | 27.5 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-3-102418 | 04 | 3483 | 258 | | 28.5 | 9:03 | 4.5 | 9:18 | X | X | X | | |
| VP-5-102418 | 05 | 3255 | 240 | | 29.5 | 9:51 | 4.5 | 9:57 | X | X | X | | |
| VP-8-102418 | 06 | 3676 | 241 | | 29.5 | 10:41 | 4.5 | 10:46 | X | X | X | | |
| VP-11-102418 | 07 | 2436 | 230 | | 29.5 | 11:27 | 4.5 | 11:33 | X | X | X | | Samples received at 21 °C |
| VP-9-102418 | 08 | 3347 | 244 | ↓ | 29 | 12:02 | 4.5 | 12:07 | X | X | X | ↓ | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kara Hitchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Clark | F-B | 10/24/18 | 3:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

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

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 2 of 2

Report To Tom Callisa
Company Floyd|Snider
Address 601 Union St. Ste. 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email

SAMPLERS (signature)

PROJECT NAME: Ave 55 - Taylor Way

PO #

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | APH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-102418 | 09 | ~~3668~~ 3608 | 101 | 10/24/18 | 30 | 0909 | 4.5 | 0913 | X | X | X | (X) | |
| VP-6-102418 | 10 | 2299 | 204 | | 28.5 | 0937 | 4.5 | 0942 | X | X | X | | |
| VP-7-102418 | 11 | 3344 | 224 | | 30 | 1002 | 4.5 | 1008 | X | X | X | | |
| VP-12-102418 | 12 | 3672 | 243 | | 29.5 | ~~1025~~ 1030 | 4.5 | 1035 | X | X | X | | |
| VP-13-102418 | 13 | 3387 | 203 | | 30 | ~~1048~~ 1048 | 4.5 | 1054 | X | X | X | | |
| VP-14-102418 | 14 | 3260 | 221 | | 30 | 1121 | 4.5 | 1127 | X | X | X | | Samples received at 2° C |
| VP-10-102418 | 15 | 2433 | 17 | ↓ | 29 | 1155 | 4.0 | 1201 | X | X | X | | |
| VP-LB-102418 | 16 | 2434 | 111 | 1 | 30 | 1121 | 0.0 | 1122 | X | X | X | ↓ | Archive |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Koren Hotchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Cha | F-S | 10/24/18 | 1316 |
| Relinquished by: | | | | |
| Received by: | | | | |

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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www.friedmanandbruya.com

November 7, 2018

Tom Colligan, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Colligan:

Included are the results from the testing of material submitted on October 24, 2018 from the Taylor Way-Ave 55, F&BI 810462 project. There are 25 pages included in this report.

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
FDS1107R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 24, 2018 by Friedman & Bruya, Inc. from the Floyd-Snider Taylor Way-Ave 55, F&BI 810462 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Floyd-Snider |
|---|---|
| 810462 -01 | VP-2-102418 |
| 810462 -02 | VP-1-102418 |
| 810462 -03 | VP-1-102418 Dup |
| 810462 -04 | VP-3-102418 |
| 810462 -05 | VP-5-102418 |
| 810462 -06 | VP-8-102418 |
| 810462 -07 | VP-11-102418 |
| 810462 -08 | VP-9-102418 |
| 810462 -09 | VP-4-102418 |
| 810462 -10 | VP-6-102418 |
| 810462 -11 | VP-7-102418 |
| 810462 -12 | VP-12-102418 |
| 810462 -13 | VP-13-102418 |
| 810462 -14 | VP-14-102418 |
| 810462 -15 | VP-10-102418 |
| 810462 -16 | VP-LB-102418 |

Naphthalene was detected in the TO-15 method blank at a level greater than one tenth the concentration detected in the samples. The data were flagged accordingly.

Several compounds exceeded the calibration range of the instrument. The data were flagged accoridngly.

An 8270D internal standard failed the acceptance criteria for sample VP-3-102418 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-2-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-01 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102608.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 47 | 9.6 | Benzene | 8.4 | 2.6 |
| Chloromethane | 2.6 | 1.3 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 140 | 60 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.3 | 0.29 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 2.4 | 0.89 | Trichloroethene | 0.90 | 0.17 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 7.1 | 1.9 |
| Pentane | 120 | 40 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 180 | 32 | 3-Hexanone | <14 | <3.3 |
| Acetone | <16 | <6.6 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 4.8 | 1.7 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.2 | 0.50 |
| Cyclopentane | 32 | 11 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.6 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.1 | 0.77 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 52 | 15 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.6 | 0.54 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.52 | 0.13 | Naphthalene | 0.35 fb | 0.066 fb |
| 1,1,1-Trichloroethane | 9.2 | 1.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-02 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102609.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 111 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 75 | 15 | Benzene | 5.0 | 1.6 |
| Chloromethane | 3.0 | 1.4 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 840 ve | 370 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | 110 | 62 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 2.5 | 0.55 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.5 | 1.3 | Trichloroethene | 6.6 | 1.2 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 11 | 2.8 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 410 | 73 | 3-Hexanone | <14 | <3.3 |
| Acetone | 500 ve | 210 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 8.0 | 2.9 | Tetrachloroethene | 11 | 1.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.8 | 0.47 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 6.7 | 1.6 |
| Cyclopentane | 22 | 7.7 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 19 | 4.3 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.1 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | 23 | 4.7 |
| 1,1-Dichloroethane | 5.0 | 1.2 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 52 | 15 | 1,2,3-Trimethylbenzene | 8.5 | 1.7 |
| Chloroform | 3.5 | 0.72 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 3.2 | 0.78 | Naphthalene | 5.5 | 1.0 |
| 1,1,1-Trichloroethane | 9.2 | 1.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-1-102418 Dup | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-03 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102610.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 111 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 72 | 15 | Benzene | 4.9 | 1.5 |
| Chloromethane | 2.6 | 1.3 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 830 ve | 360 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 2.5 | 0.53 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 3.6 | 1.3 | Trichloroethene | 8.4 | 1.6 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 12 | 3.3 |
| Pentane | 150 | 50 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 390 | 69 | 3-Hexanone | <14 | <3.3 |
| Acetone | 490 ve | 210 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 8.8 | 3.2 | Tetrachloroethene | 11 | 1.6 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.8 | 0.45 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 6.7 | 1.5 |
| Cyclopentane | 23 | 7.8 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 18 | 4.2 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.0 | 1.8 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | 0.55 | 0.11 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | 24 | 4.9 |
| 1,1-Dichloroethane | 5.1 | 1.3 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 53 | 15 | 1,2,3-Trimethylbenzene | 9.0 | 1.8 |
| Chloroform | 3.9 | 0.81 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 2.9 | 0.73 | Naphthalene | 3.6 | 0.69 |
| 1,1,1-Trichloroethane | 8.8 | 1.6 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 11/24/18 | Lab ID: | 810462-04 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102611.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 J | <0.33 J | 1-Butanol | <20 J | <6.6 J |
| Propene | <2.3 J | <1.3 J | Carbon tetrachloride | <2.1 J | <0.33 J |
| Dichlorodifluoromethane | 18 J | 3.7 J | Benzene | <1.1 J | <0.33 J |
| Chloromethane | <0.68 J | <0.33 J | Cyclohexane | <23 J | <6.6 J |
| F-114 | <2.3 J | <0.33 J | 2-Pentanone | <12 | <3.3 |
| Isobutene | 16 J | 6.9 J | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 J | <16 J | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 J | <0.33 J | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 J | <0.033 J | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 J | <1.3 J | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 J | <0.33 J | Trichloroethene | 1.1 | 0.20 |
| Ethanol | <25 J | <13 J | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 J | <3.3 J | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 J | <1.3 J | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 J | <0.33 J | Toluene | 2.3 | 0.61 |
| Pentane | <9.7 J | <3.3 J | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 96 J | 17 J | 3-Hexanone | <14 | <3.3 |
| Acetone | 21 J | 8.8 J | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 J | <12 J | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 J | <0.33 J | Tetrachloroethene | 4.7 | 0.69 |
| Iodomethane | <1.9 J | <0.33 J | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3J | <0.33 J | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 J | <3.3 J | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 J | <0.33 J | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 J | <0.33 J | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 J | <3.3 J | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 J | <3.3 J | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 J | <82 J | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 J | <6.6 J | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 J | <1.6 J | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 J | <6.6 J | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 J | <0.33 J | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 J | <0.33 J | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 J | <3.3 J | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.32 J | 0.066 J | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 J | <3.3 J | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 J | <0.033 J | Naphthalene | 0.59 fb | 0.11 fb |
| 1,1,1-Trichloroethane | 2.9 J | 0.54 J | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-3-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-04 1/6.25 |
| Date Analyzed: | 11/03/18 | Data File: | 110225.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <2.2 | <0.62 | 1-Butanol | <38 | <12 |
| Propene | <4.3 | <2.5 | Carbon tetrachloride | <3.9 | <0.62 |
| Dichlorodifluoromethane | 23 | 4.6 | Benzene | <2 | <0.62 |
| Chloromethane | <1.3 | <0.62 | Cyclohexane | <43 | <12 |
| F-114 | <4.4 | <0.62 | 2-Pentanone | <22 | <6.2 |
| Isobutene | 17 | 7.4 | 3-Pentanone | <22 | <6.2 |
| Acetaldehyde | <56 | <31 | Pentanal | <22 | <6.2 |
| Vinyl chloride | <1.6 | <0.62 | 1,2-Dichloropropane | <1.4 | <0.31 |
| 1,3-Butadiene | <0.14 | <0.062 | 1,4-Dioxane | <2.3 | <0.62 |
| Bromomethane | <9.7 | <2.5 | Bromodichloromethane | <0.42 | <0.062 |
| Chloroethane | <1.6 | <0.62 | Trichloroethene | 3.0 | 0.56 |
| Ethanol | <47 | <25 | cis-1,3-Dichloropropene | <2.8 | <0.62 |
| Acetonitrile | <10 | <6.2 | 4-Methyl-2-pentanone | <26 | <6.2 |
| Acrolein | <5.7 | <2.5 | trans-1,3-Dichloropropene | <2.8 | <0.62 |
| Acrylonitrile | <1.4 | <0.62 | Toluene | 4.0 | 1.0 |
| Pentane | <18 | <6.2 | 1,1,2-Trichloroethane | <0.34 | <0.062 |
| Trichlorofluoromethane | 110 | 20 | 3-Hexanone | <26 | <6.2 |
| Acetone | <30 | <12 | 2-Hexanone | <26 | <6.2 |
| 2-Propanol | <54 | <22 | Hexanal | <26 | <6.2 |
| Isoprene | <1.7 | <0.62 | Tetrachloroethene | 5.7 | 0.84 |
| Iodomethane | <3.6 | <0.62 | Dibromochloromethane | <0.53 | <0.062 |
| 1,1-Dichloroethene | <2.5 | <0.62 | 1,2-Dibromoethane (EDB) | <0.48 | <0.062 |
| Methacrolein | <18 | <6.2 | Chlorobenzene | <2.9 | <0.62 |
| trans-1,2-Dichloroethene | <2.5 | <0.62 | Ethylbenzene | <2.7 | <0.62 |
| Cyclopentane | <1.8 | <0.62 | 1,1,2,2-Tetrachloroethane | <0.86 | <0.12 |
| Methyl vinyl ketone | <18 | <6.2 | m,p-Xylene | <5.4 | <1.2 |
| Butanal | <18 | <6.2 | o-Xylene | <2.7 | <0.62 |
| Methylene chloride | <540 | <160 | Styrene | <5.3 | <1.2 |
| CFC-113 | <4.8 | <0.62 | Bromoform | <13 | <1.2 |
| Carbon disulfide | <39 | <12 | Benzyl chloride | <0.32 | <0.062 |
| Methyl t-butyl ether (MTBE) | <11 | <3.1 | 1,3,5-Trimethylbenzene | <15 | <3.1 |
| Vinyl acetate | <44 | <12 | 1,2,4-Trimethylbenzene | <15 | <3.1 |
| 1,1-Dichloroethane | <2.5 | <0.62 | 1,3-Dichlorobenzene | <3.8 | <0.62 |
| cis-1,2-Dichloroethene | <2.5 | <0.62 | 1,4-Dichlorobenzene | <1.5 | <0.25 |
| Hexane | <22 | <6.2 | 1,2,3-Trimethylbenzene | <15 | <3.1 |
| Chloroform | 0.46 | 0.094 | 1,2-Dichlorobenzene | <3.8 | <0.62 |
| 2-Butanone (MEK) | <18 | <6.2 | 1,2,4-Trichlorobenzene | <4.6 | <0.62 |
| 1,2-Dichloroethane (EDC) | <0.25 | <0.062 | Naphthalene | 0.75 fb | 0.14 fb |
| 1,1,1-Trichloroethane | 3.7 | 0.68 | Hexachlorobutadiene | <1.3 | <0.12 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-5-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-05 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102612.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 29 | 5.9 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 32 | 14 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.2 | 0.26 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 0.89 | 0.16 |
| Ethanol | 51 | 27 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 4.0 | 1.1 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 250 | 45 | 3-Hexanone | <14 | <3.3 |
| Acetone | 35 | 15 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 3.3 | 0.77 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 0.47 | 0.096 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.50 fb | 0.096 fb |
| 1,1,1-Trichloroethane | 6.4 | 1.2 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-8-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-06 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102613.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 29 | 5.9 | Benzene | 8.8 | 2.8 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | 27 | 7.8 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 760 ve | 330 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.8 | 0.39 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 2.4 | 0.91 | Trichloroethene | 6.9 | 1.3 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 12 | 3.2 |
| Pentane | 290 | 98 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 410 | 73 | 3-Hexanone | <14 | <3.3 |
| Acetone | 550 ve | 230 ve | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 18 | 6.4 | Tetrachloroethene | 2.9 | 0.42 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 2.3 | 0.58 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 3.9 | 0.90 |
| Cyclopentane | 74 | 26 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 4.8 | 1.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.2 | 0.50 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 6.9 | 0.90 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 7.2 | 1.8 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 40 | 11 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.1 | 0.44 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.89 | 0.22 | Naphthalene | 0.42 fb | 0.079 fb |
| 1,1,1-Trichloroethane | 13 | 2.4 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-11-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-07 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102614.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 3.6 | 0.72 | Benzene | 3.5 | 1.1 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 12 | 5.1 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 11 | 2.0 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 13 | 3.5 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2.7 | 0.49 | 3-Hexanone | <14 | <3.3 |
| Acetone | 25 | 10 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.8 | 0.56 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 1.5 | 0.37 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 1.8 | 0.42 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 6.1 | 1.4 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.6 | 0.59 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 2.9 | 0.38 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 2.7 | 0.66 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | <0.16 | <0.033 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.50 fb | 0.096 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-9-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-08 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102615.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.6 | 1.5 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 2.9 | 0.59 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.2 | 0.21 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.3 | 0.62 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 3.6 | 0.64 | 3-Hexanone | <14 | <3.3 |
| Acetone | 17 | 7.1 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.0 | 0.40 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.40 fb | 0.076 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-4-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-09 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102616.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 10 | 2.1 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 0.96 | 0.18 |
| Ethanol | 26 | 14 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.1 | 0.57 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 69 | 12 | 3-Hexanone | <14 | <3.3 |
| Acetone | 43 | 18 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 2.2 | 0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.5 | 0.31 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.43 fb | 0.082 fb |
| 1,1,1-Trichloroethane | 2.0 | 0.36 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-6-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-10 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102617.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 450 ve | 260 ve | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 140 | 28 | Benzene | 21 | 6.6 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | 25 | 7.4 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 960 ve | 420 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <270 | <150 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 1.6 | 0.34 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | 0.88 | 0.33 | Trichloroethene | 28 | 5.2 |
| Ethanol | 31 | 17 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 21 | 5.6 |
| Pentane | 380 | 130 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 2,000 ve | 360 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 120 | 51 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | 12 | 4.2 | Tetrachloroethene | 9.5 | 1.4 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 7.9 | 2.0 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 5.8 | 1.3 |
| Cyclopentane | 39 | 14 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | 11 | 4.0 | m,p-Xylene | 9.1 | 2.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.9 | 0.68 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 8.2 | 1.1 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.8 | 0.93 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | 110 | 33 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 3.1 | 0.64 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 1.2 | 0.31 | Naphthalene | 0.54 fb | 0.10 fb |
| 1,1,1-Trichloroethane | 23 | 4.1 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-7-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-11 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102618.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 77 | 16 | Benzene | 1.1 | 0.34 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | 430 ve | 190 ve | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | 4.5 | 0.97 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.6 | 0.30 |
| Ethanol | 40 | 21 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 3.7 | 0.98 |
| Pentane | 43 | 15 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 1,700 ve | 290 ve | 3-Hexanone | <14 | <3.3 |
| Acetone | 26 | 11 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 2.3 | 0.34 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | 15 | 5.1 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 4.0 | 0.98 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.9 | 0.38 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.80 | 0.20 | Naphthalene | 0.47 fb | 0.089 fb |
| 1,1,1-Trichloroethane | 19 | 3.4 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-12-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-12 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102619.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | <2.3 | <1.3 | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 4.0 | 0.80 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.3 | 0.24 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 2.7 | 0.73 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 15 c | 2.7 c | 3-Hexanone | <14 | <3.3 |
| Acetone | 18 | 7.6 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.3 | 0.27 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.45 fb | 0.086 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-13-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-13 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102620.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 3.2 fb | 1.8 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 6.3 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 35 | 6.6 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 42 | 11 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 29 | 5.1 | 3-Hexanone | <14 | <3.3 |
| Acetone | 23 | 9.8 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 8.0 | 1.2 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | 8.9 | 2.2 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 2.6 | 0.60 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 6.8 | 1.6 |
| Butanal | <9.7 | <3.3 | o-Xylene | 2.6 | 0.60 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 15 | 2.0 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | 3.8 | 0.95 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 2.3 | 0.48 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.13 | 0.033 | Naphthalene | 0.36 fb | 0.069 fb |
| 1,1,1-Trichloroethane | 15 | 2.7 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-14-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-14 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102621.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.8 fb | 1.6 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 62 | 12 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 7.4 | 1.4 |
| Ethanol | 49 | 26 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | 38 | 9.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 34 | 9.1 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 12 | 2.2 | 3-Hexanone | <14 | <3.3 |
| Acetone | 58 | 24 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | 3.1 | 0.45 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | 5.7 | 1.3 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | 27 | 6.1 |
| Butanal | <9.7 | <3.3 | o-Xylene | 8.3 | 1.9 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | 4.1 | 0.53 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.3 | 0.27 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | 13 | 4.4 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | 0.31 | 0.076 | Naphthalene | 2.3 fb | 0.43 fb |
| 1,1,1-Trichloroethane | 3.3 | 0.61 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-10-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-15 1/3.3 |
| Date Analyzed: | 10/26/18 | Data File: | 102622.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <1.2 | <0.33 | 1-Butanol | <20 | <6.6 |
| Propene | 2.4 fb | 1.4 fb | Carbon tetrachloride | <2.1 | <0.33 |
| Dichlorodifluoromethane | 6.6 | 1.3 | Benzene | <1.1 | <0.33 |
| Chloromethane | <0.68 | <0.33 | Cyclohexane | <23 | <6.6 |
| F-114 | <2.3 | <0.33 | 2-Pentanone | <12 | <3.3 |
| Isobutene | <3 | <1.3 | 3-Pentanone | <12 | <3.3 |
| Acetaldehyde | <30 | <16 | Pentanal | <12 | <3.3 |
| Vinyl chloride | <0.84 | <0.33 | 1,2-Dichloropropane | <0.76 | <0.16 |
| 1,3-Butadiene | <0.073 | <0.033 | 1,4-Dioxane | <1.2 | <0.33 |
| Bromomethane | <5.1 | <1.3 | Bromodichloromethane | <0.22 | <0.033 |
| Chloroethane | <0.87 | <0.33 | Trichloroethene | 1.8 | 0.33 |
| Ethanol | <25 | <13 | cis-1,3-Dichloropropene | <1.5 | <0.33 |
| Acetonitrile | <5.5 | <3.3 | 4-Methyl-2-pentanone | <14 | <3.3 |
| Acrolein | <3 | <1.3 | trans-1,3-Dichloropropene | <1.5 | <0.33 |
| Acrylonitrile | <0.72 | <0.33 | Toluene | 3.5 | 0.92 |
| Pentane | <9.7 | <3.3 | 1,1,2-Trichloroethane | <0.18 | <0.033 |
| Trichlorofluoromethane | 55 | 9.9 | 3-Hexanone | <14 | <3.3 |
| Acetone | 19 | 8.1 | 2-Hexanone | <14 | <3.3 |
| 2-Propanol | <28 | <12 | Hexanal | <14 | <3.3 |
| Isoprene | <0.92 | <0.33 | Tetrachloroethene | <2.2 | <0.33 |
| Iodomethane | <1.9 | <0.33 | Dibromochloromethane | <0.28 | <0.033 |
| 1,1-Dichloroethene | <1.3 | <0.33 | 1,2-Dibromoethane (EDB) | <0.25 | <0.033 |
| Methacrolein | <9.5 | <3.3 | Chlorobenzene | <1.5 | <0.33 |
| trans-1,2-Dichloroethene | <1.3 | <0.33 | Ethylbenzene | <1.4 | <0.33 |
| Cyclopentane | <0.95 | <0.33 | 1,1,2,2-Tetrachloroethane | <0.45 | <0.066 |
| Methyl vinyl ketone | <9.5 | <3.3 | m,p-Xylene | <2.9 | <0.66 |
| Butanal | <9.7 | <3.3 | o-Xylene | <1.4 | <0.33 |
| Methylene chloride | <290 | <82 | Styrene | <2.8 | <0.66 |
| CFC-113 | <2.5 | <0.33 | Bromoform | <6.8 | <0.66 |
| Carbon disulfide | <21 | <6.6 | Benzyl chloride | <0.17 | <0.033 |
| Methyl t-butyl ether (MTBE) | <5.9 | <1.6 | 1,3,5-Trimethylbenzene | <8.1 | <1.6 |
| Vinyl acetate | <23 | <6.6 | 1,2,4-Trimethylbenzene | <8.1 | <1.6 |
| 1,1-Dichloroethane | <1.3 | <0.33 | 1,3-Dichlorobenzene | <2 | <0.33 |
| cis-1,2-Dichloroethene | <1.3 | <0.33 | 1,4-Dichlorobenzene | <0.79 | <0.13 |
| Hexane | <12 | <3.3 | 1,2,3-Trimethylbenzene | <8.1 | <1.6 |
| Chloroform | 1.6 | 0.34 | 1,2-Dichlorobenzene | <2 | <0.33 |
| 2-Butanone (MEK) | <9.7 | <3.3 | 1,2,4-Trichlorobenzene | <2.4 | <0.33 |
| 1,2-Dichloroethane (EDC) | <0.13 | <0.033 | Naphthalene | 0.45 fb | 0.086 fb |
| 1,1,1-Trichloroethane | <1.8 | <0.33 | Hexachlorobutadiene | <0.7 | <0.066 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | VP-LB-102418 | Client: | Floyd-Snider |
| Date Received: | 10/24/18 | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | 10/24/18 | Lab ID: | 810462-16 1/10 |
| Date Analyzed: | 11/03/18 | Data File: | 110226.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | 18 | 5.1 | 1-Butanol | <61 | <20 |
| Propene | 7.4 fb | 4.3 fb | Carbon tetrachloride | <6.3 | <1 |
| Dichlorodifluoromethane | <4.9 | <1 | Benzene | <3.2 | <1 |
| Chloromethane | <2.1 | <1 | Cyclohexane | <69 | <20 |
| F-114 | <7 | <1 | 2-Pentanone | <35 | <10 |
| Isobutene | <9.2 | <4 | 3-Pentanone | <35 | <10 |
| Acetaldehyde | <90 | <50 | Pentanal | <35 | <10 |
| Vinyl chloride | <2.6 | <1 | 1,2-Dichloropropane | <2.3 | <0.5 |
| 1,3-Butadiene | 0.35 | 0.16 | 1,4-Dioxane | <3.6 | <1 |
| Bromomethane | <16 | <4 | Bromodichloromethane | <0.67 | <0.1 |
| Chloroethane | <2.6 | <1 | Trichloroethene | <2.7 | <0.5 |
| Ethanol | 86 | 46 | cis-1,3-Dichloropropene | <4.5 | <1 |
| Acetonitrile | <17 | <10 | 4-Methyl-2-pentanone | <41 | <10 |
| Acrolein | <9.2 | <4 | trans-1,3-Dichloropropene | <4.5 | <1 |
| Acrylonitrile | <2.2 | <1 | Toluene | 4.4 | 1.2 |
| Pentane | <30 | <10 | 1,1,2-Trichloroethane | <0.55 | <0.1 |
| Trichlorofluoromethane | <5.6 | <1 | 3-Hexanone | <41 | <10 |
| Acetone | 64 | 27 | 2-Hexanone | <41 | <10 |
| 2-Propanol | <86 | <35 | Hexanal | <41 | <10 |
| Isoprene | 13 | 4.5 | Tetrachloroethene | <6.8 | <1 |
| Iodomethane | <5.8 | <1 | Dibromochloromethane | <0.85 | <0.1 |
| 1,1-Dichloroethene | <4 | <1 | 1,2-Dibromoethane (EDB) | <0.77 | <0.1 |
| Methacrolein | <29 | <10 | Chlorobenzene | <4.6 | <1 |
| trans-1,2-Dichloroethene | <4 | <1 | Ethylbenzene | <4.3 | <1 |
| Cyclopentane | <2.9 | <1 | 1,1,2,2-Tetrachloroethane | <1.4 | <0.2 |
| Methyl vinyl ketone | <29 | <10 | m,p-Xylene | <8.7 | <2 |
| Butanal | <29 | <10 | o-Xylene | <4.3 | <1 |
| Methylene chloride | 2,500 ve | 730 ve | Styrene | <8.5 | <2 |
| CFC-113 | <7.7 | <1 | Bromoform | <21 | <2 |
| Carbon disulfide | <62 | <20 | Benzyl chloride | <0.52 | <0.1 |
| Methyl t-butyl ether (MTBE) | <18 | <5 | 1,3,5-Trimethylbenzene | <25 | <5 |
| Vinyl acetate | <70 | <20 | 1,2,4-Trimethylbenzene | <25 | <5 |
| 1,1-Dichloroethane | <4 | <1 | 1,3-Dichlorobenzene | <6 | <1 |
| cis-1,2-Dichloroethene | <4 | <1 | 1,4-Dichlorobenzene | <2.4 | <0.4 |
| Hexane | 57 | 16 | 1,2,3-Trimethylbenzene | <25 | <5 |
| Chloroform | <0.49 | <0.1 | 1,2-Dichlorobenzene | <6 | <1 |
| 2-Butanone (MEK) | <29 | <10 | 1,2,4-Trichlorobenzene | <7.4 | <1 |
| 1,2-Dichloroethane (EDC) | <0.4 | <0.1 | Naphthalene | <1 | <0.2 |
| 1,1,1-Trichloroethane | <5.5 | <1 | Hexachlorobutadiene | <2.1 | <0.2 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2396 mb |
| Date Analyzed: | 10/26/18 | Data File: | 102605.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | <0.1 | <0.02 |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

## Analysis For Volatile Compounds By Method TO-15

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Floyd-Snider |
| Date Received: | Not Applicable | Project: | Taylor Way-Ave 55, F&BI 810462 |
| Date Collected: | Not Applicable | Lab ID: | 08-2449 mb |
| Date Analyzed: | 11/02/18 | Data File: | 110208.D |
| Matrix: | Air | Instrument: | GCMS7 |
| Units: | ug/m3 | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 70 | 130 |

| Compounds: | Concentration ug/m3 | Concentration ppbv | Compounds: | Concentration ug/m3 | Concentration ppbv |
|---|---|---|---|---|---|
| Chlorodifluoromethane | <0.35 | <0.1 | 1-Butanol | <6.1 | <2 |
| Propene | <0.69 | <0.4 | Carbon tetrachloride | <0.63 | <0.1 |
| Dichlorodifluoromethane | <0.49 | <0.1 | Benzene | <0.32 | <0.1 |
| Chloromethane | <0.21 | <0.1 | Cyclohexane | <6.9 | <2 |
| F-114 | <0.7 | <0.1 | 2-Pentanone | <3.5 | <1 |
| Isobutene | <0.92 | <0.4 | 3-Pentanone | <3.5 | <1 |
| Acetaldehyde | <9 | <5 | Pentanal | <3.5 | <1 |
| Vinyl chloride | <0.26 | <0.1 | 1,2-Dichloropropane | <0.23 | <0.05 |
| 1,3-Butadiene | <0.022 | <0.01 | 1,4-Dioxane | <0.36 | <0.1 |
| Bromomethane | <1.6 | <0.4 | Bromodichloromethane | <0.067 | <0.01 |
| Chloroethane | <0.26 | <0.1 | Trichloroethene | <0.27 | <0.05 |
| Ethanol | <7.5 | <4 | cis-1,3-Dichloropropene | <0.45 | <0.1 |
| Acetonitrile | <1.7 | <1 | 4-Methyl-2-pentanone | <4.1 | <1 |
| Acrolein | <0.92 | <0.4 | trans-1,3-Dichloropropene | <0.45 | <0.1 |
| Acrylonitrile | <0.22 | <0.1 | Toluene | <0.38 | <0.1 |
| Pentane | <3 | <1 | 1,1,2-Trichloroethane | <0.055 | <0.01 |
| Trichlorofluoromethane | <0.56 | <0.1 | 3-Hexanone | <4.1 | <1 |
| Acetone | <4.8 | <2 | 2-Hexanone | <4.1 | <1 |
| 2-Propanol | <8.6 | <3.5 | Hexanal | <4.1 | <1 |
| Isoprene | <0.28 | <0.1 | Tetrachloroethene | <0.68 | <0.1 |
| Iodomethane | <0.58 | <0.1 | Dibromochloromethane | <0.085 | <0.01 |
| 1,1-Dichloroethene | <0.4 | <0.1 | 1,2-Dibromoethane (EDB) | <0.077 | <0.01 |
| Methacrolein | <2.9 | <1 | Chlorobenzene | <0.46 | <0.1 |
| trans-1,2-Dichloroethene | <0.4 | <0.1 | Ethylbenzene | <0.43 | <0.1 |
| Cyclopentane | <0.29 | <0.1 | 1,1,2,2-Tetrachloroethane | <0.14 | <0.02 |
| Methyl vinyl ketone | <2.9 | <1 | m,p-Xylene | <0.87 | <0.2 |
| Butanal | <2.9 | <1 | o-Xylene | <0.43 | <0.1 |
| Methylene chloride | <87 | <25 | Styrene | <0.85 | <0.2 |
| CFC-113 | <0.77 | <0.1 | Bromoform | <2.1 | <0.2 |
| Carbon disulfide | <6.2 | <2 | Benzyl chloride | <0.052 | <0.01 |
| Methyl t-butyl ether (MTBE) | <1.8 | <0.5 | 1,3,5-Trimethylbenzene | <2.5 | <0.5 |
| Vinyl acetate | <7 | <2 | 1,2,4-Trimethylbenzene | <2.5 | <0.5 |
| 1,1-Dichloroethane | <0.4 | <0.1 | 1,3-Dichlorobenzene | <0.6 | <0.1 |
| cis-1,2-Dichloroethene | <0.4 | <0.1 | 1,4-Dichlorobenzene | <0.24 | <0.04 |
| Hexane | <3.5 | <1 | 1,2,3-Trimethylbenzene | <2.5 | <0.5 |
| Chloroform | <0.049 | <0.01 | 1,2-Dichlorobenzene | <0.6 | <0.1 |
| 2-Butanone (MEK) | <2.9 | <1 | 1,2,4-Trichlorobenzene | <0.74 | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.04 | <0.01 | Naphthalene | 0.12 lc | 0.023 lc |
| 1,1,1-Trichloroethane | <0.55 | <0.1 | Hexachlorobutadiene | <0.21 | <0.02 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 116 | 70-130 |
| Propene | ppbv | 5 | 104 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 103 | 70-130 |
| Chloromethane | ppbv | 5 | 119 | 70-130 |
| F-114 | ppbv | 5 | 111 | 70-130 |
| Isobutene | ppbv | 5 | 120 | 70-130 |
| Acetaldehyde | ppbv | 5 | 126 | 70-130 |
| Vinyl chloride | ppbv | 5 | 115 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 127 | 70-130 |
| Bromomethane | ppbv | 5 | 107 | 70-130 |
| Chloroethane | ppbv | 5 | 112 | 70-130 |
| Ethanol | ppbv | 5 | 115 | 70-130 |
| Acetonitrile | ppbv | 5 | 122 | 70-130 |
| Acrolein | ppbv | 5 | 110 | 70-130 |
| Acrylonitrile | ppbv | 5 | 112 | 70-130 |
| Pentane | ppbv | 5 | 119 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 101 | 70-130 |
| Acetone | ppbv | 5 | 109 | 70-130 |
| 2-Propanol | ppbv | 5 | 113 | 70-130 |
| Isoprene | ppbv | 5 | 105 | 70-130 |
| Iodomethane | ppbv | 5 | 95 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 99 | 70-130 |
| Methacrolein | ppbv | 5 | 107 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 99 | 70-130 |
| Cyclopentane | ppbv | 5 | 120 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 118 | 70-130 |
| Butanal | ppbv | 5 | 101 | 70-130 |
| Methylene chloride | ppbv | 5 | 90 | 70-130 |
| CFC-113 | ppbv | 5 | 99 | 70-130 |
| Carbon disulfide | ppbv | 5 | 97 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 105 | 70-130 |
| Vinyl acetate | ppbv | 5 | 109 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 108 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 95 | 70-130 |
| Hexane | ppbv | 5 | 112 | 70-130 |
| Chloroform | ppbv | 5 | 107 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 108 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 107 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 105 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| 1-Butanol | ppbv | 5 | 104 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 96 | 70-130 |
| Benzene | ppbv | 5 | 106 | 70-130 |
| Cyclohexane | ppbv | 5 | 104 | 70-130 |
| 2-Pentanone | ppbv | 5 | 110 | 70-130 |
| 3-Pentanone | ppbv | 5 | 115 | 70-130 |
| Pentanal | ppbv | 5 | 96 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 102 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 98 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 103 | 70-130 |
| Trichloroethene | ppbv | 5 | 93 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 86 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 93 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 95 | 70-130 |
| Toluene | ppbv | 5 | 89 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 97 | 70-130 |
| 3-Hexanone | ppbv | 5 | 93 | 70-130 |
| 2-Hexanone | ppbv | 5 | 109 | 70-130 |
| Hexanal | ppbv | 5 | 101 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 89 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 106 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 102 | 70-130 |
| Chlorobenzene | ppbv | 5 | 102 | 70-130 |
| Ethylbenzene | ppbv | 5 | 101 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 120 | 70-130 |
| m,p-Xylene | ppbv | 10 | 109 | 70-130 |
| o-Xylene | ppbv | 5 | 116 | 70-130 |
| Styrene | ppbv | 5 | 101 | 70-130 |
| Bromoform | ppbv | 5 | 104 | 70-130 |
| Benzyl chloride | ppbv | 5 | 126 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 100 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 98 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 108 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 117 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 5 | 105 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 112 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 91 | 70-130 |
| Naphthalene | ppbv | 5 | 96 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 100 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chlorodifluoromethane | ppbv | 5 | 112 | 70-130 |
| Propene | ppbv | 5 | 103 | 70-130 |
| Dichlorodifluoromethane | ppbv | 5 | 94 | 70-130 |
| Chloromethane | ppbv | 5 | 112 | 70-130 |
| F-114 | ppbv | 5 | 107 | 70-130 |
| Isobutene | ppbv | 5 | 115 | 70-130 |
| Acetaldehyde | ppbv | 5 | 123 | 70-130 |
| Vinyl chloride | ppbv | 5 | 111 | 70-130 |
| 1,3-Butadiene | ppbv | 5 | 122 | 70-130 |
| Bromomethane | ppbv | 5 | 105 | 70-130 |
| Chloroethane | ppbv | 5 | 108 | 70-130 |
| Ethanol | ppbv | 5 | 98 | 70-130 |
| Acetonitrile | ppbv | 5 | 114 | 70-130 |
| Acrolein | ppbv | 5 | 115 | 70-130 |
| Acrylonitrile | ppbv | 5 | 110 | 70-130 |
| Pentane | ppbv | 5 | 115 | 70-130 |
| Trichlorofluoromethane | ppbv | 5 | 93 | 70-130 |
| Acetone | ppbv | 5 | 99 | 70-130 |
| 2-Propanol | ppbv | 5 | 107 | 70-130 |
| Isoprene | ppbv | 5 | 101 | 70-130 |
| Iodomethane | ppbv | 5 | 84 | 70-130 |
| 1,1-Dichloroethene | ppbv | 5 | 92 | 70-130 |
| Methacrolein | ppbv | 5 | 102 | 70-130 |
| trans-1,2-Dichloroethene | ppbv | 5 | 93 | 70-130 |
| Cyclopentane | ppbv | 5 | 121 | 70-130 |
| Methyl vinyl ketone | ppbv | 5 | 113 | 70-130 |
| Butanal | ppbv | 5 | 94 | 70-130 |
| Methylene chloride | ppbv | 5 | 72 | 70-130 |
| CFC-113 | ppbv | 5 | 92 | 70-130 |
| Carbon disulfide | ppbv | 5 | 91 | 70-130 |
| Methyl t-butyl ether (MTBE) | ppbv | 5 | 96 | 70-130 |
| Vinyl acetate | ppbv | 5 | 107 | 70-130 |
| 1,1-Dichloroethane | ppbv | 5 | 103 | 70-130 |
| cis-1,2-Dichloroethene | ppbv | 5 | 89 | 70-130 |
| Hexane | ppbv | 5 | 105 | 70-130 |
| Chloroform | ppbv | 5 | 99 | 70-130 |
| 2-Butanone (MEK) | ppbv | 5 | 98 | 70-130 |
| 1,2-Dichloroethane (EDC) | ppbv | 5 | 99 | 70-130 |
| 1,1,1-Trichloroethane | ppbv | 5 | 97 | 70-130 |
| 1-Butanol | ppbv | 5 | 95 | 70-130 |
| Carbon tetrachloride | ppbv | 5 | 91 | 70-130 |

Date of Report: 11/07/18
Date Received: 10/24/18
Project: Taylor Way-Ave 55, F&BI 810462

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (continued)

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ppbv | 5 | 99 | 70-130 |
| Cyclohexane | ppbv | 5 | 101 | 70-130 |
| 2-Pentanone | ppbv | 5 | 111 | 70-130 |
| 3-Pentanone | ppbv | 5 | 111 | 70-130 |
| Pentanal | ppbv | 5 | 104 | 70-130 |
| 1,2-Dichloropropane | ppbv | 5 | 102 | 70-130 |
| 1,4-Dioxane | ppbv | 5 | 93 | 70-130 |
| Bromodichloromethane | ppbv | 5 | 101 | 70-130 |
| Trichloroethene | ppbv | 5 | 91 | 70-130 |
| cis-1,3-Dichloropropene | ppbv | 5 | 87 | 70-130 |
| 4-Methyl-2-pentanone | ppbv | 5 | 88 | 70-130 |
| trans-1,3-Dichloropropene | ppbv | 5 | 92 | 70-130 |
| Toluene | ppbv | 5 | 86 | 70-130 |
| 1,1,2-Trichloroethane | ppbv | 5 | 95 | 70-130 |
| 3-Hexanone | ppbv | 5 | 94 | 70-130 |
| 2-Hexanone | ppbv | 5 | 106 | 70-130 |
| Hexanal | ppbv | 5 | 98 | 70-130 |
| Tetrachloroethene | ppbv | 5 | 84 | 70-130 |
| Dibromochloromethane | ppbv | 5 | 101 | 70-130 |
| 1,2-Dibromoethane (EDB) | ppbv | 5 | 98 | 70-130 |
| Chlorobenzene | ppbv | 5 | 93 | 70-130 |
| Ethylbenzene | ppbv | 5 | 94 | 70-130 |
| 1,1,2,2,-Tetrachloroethane | ppbv | 5 | 114 | 70-130 |
| m,p-Xylene | ppbv | 10 | 101 | 70-130 |
| o-Xylene | ppbv | 5 | 108 | 70-130 |
| Styrene | ppbv | 5 | 95 | 70-130 |
| Bromoform | ppbv | 5 | 95 | 70-130 |
| Benzyl chloride | ppbv | 5 | 117 | 70-130 |
| 1,3,5-Trimethylbenzene | ppbv | 5 | 92 | 70-130 |
| 1,2,4-Trimethylbenzene | ppbv | 5 | 91 | 70-130 |
| 1,3-Dichlorobenzene | ppbv | 5 | 99 | 70-130 |
| 1,4-Dichlorobenzene | ppbv | 5 | 107 | 70-130 |
| 1,2,3-Trimethylbenzene | ppbv | 5 | 98 | 70-130 |
| 1,2-Dichlorobenzene | ppbv | 5 | 102 | 70-130 |
| 1,2,4-Trichlorobenzene | ppbv | 5 | 81 | 70-130 |
| Naphthalene | ppbv | 5 | 89 | 70-130 |
| Hexachloro-1,3-butadiene | ppbv | 5 | 90 | 70-130 |

# 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.

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 the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

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

j - The analyte concentration is reported below the lowest calibration standard. 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 laboratory control sample(s) percent recovery and/or RPD were 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 analyte 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 with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

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.

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18


Report To Tom Colligan

Company Floyd Snider

Address 601 Union St., Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206-292-2078 Email tom.colligan@floydsnider.com


SAMPLERS (*signature*): Kara, Gabe

PROJECT NAME: Taylor Way-Ave 55

PO #:

REPORTING LEVEL: ☐ Indoor Air ☐ Deep Soil Gas ☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Tom Colligan



TURNAROUND TIME: ☑ Standard ☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL: ☑ Dispose after 30 days ☐ Archive Samples ☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-2-102418 | 01 | 3311 | 242 | 10/24/18 | 29 | 7:59 | 4.5 | 8:05 | X | X | X | | |
| VP-4-102418 | 02 | 3257 | 257 | | 28 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-1-102418 DUP | 03 | 3390 | 256 | | 27.5 | 0838 | 4.5 | 0843 | X | X | X | | |
| VP-3-102418 | 04 | 3483 | 258 | | 28.5 | 9:03 | 4.5 | 9:08 | X | X | X | | |
| VP-5-102418 | 05 | 3255 | 240 | | 29.5 | 9:51 | 4.5 | 9:57 | X | X | X | | |
| VP-8-102418 | 06 | 3676 | 241 | | 29.5 | 10:41 | 4.5 | 10:46 | X | X | X | | |
| VP-11-102418 | 07 | 2436 | 230 | | 29.5 | 11:27 | 4.5 | 11:33 | X | X | X | | Samples received at 21 °C |
| VP-9-102418 | 08 | 3347 | 244 | ↓ | 29 | 12:02 | 4.5 | 12:07 | X | X | X | | |


*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: | Kara Hitchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Chan | F-B | 10/24/18 | 3:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

810462

# SAMPLE CHAIN OF CUSTODY ME 10-24-18

Page # 2 of 2

Report To Tom Colligan
Company Floyd|Snider
Address 601 Union St. Ste. 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email

SAMPLERS (signature)

PROJECT NAME: Ave 55 - Taylor Way
PO #:

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☒ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO:

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

| Sample Name | Lab ID | Canister ID | Flow Contr. ID | Date Sampled | Field Initial Press. (Hg) | Field Initial Time | Field Final Press. (Hg) | Field Final Time | TO-15 Full Scan | TO-15 BTEXN | TO-15 cVOCs | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VP-4-102418 | 09 | ~~736~~ 3668 | 101 | 10/24/18 | 30 | 0909 | 4.5 | 0913 | X | X | X | | |
| VP-6-102418 | 10 | 2299 | 204 | | 28.5 | 0937 | 4.5 | 0942 | X | X | X | | |
| VP-7-102418 | 11 | 3344 | 224 | | 30 | 1002 | 4.5 | 1008 | X | X | X | | |
| VP-12-102418 | 12 | 3672 | 243 | | 29.5 | ~~1035~~ 1030 | 4.5 | 1035 | X | X | X | | |
| VP-13-102418 | 13 | 3387 | 203 | | 30 | ~~1048~~ 1048 | 4.5 | 1054 | X | X | X | | |
| VP-14-102418 | 14 | 3260 | 221 | | 30 | 1121 | 4.5 | 1127 | X | X | X | | Samples received at 21 °C |
| VP-10-102418 | 15 | 2433 | 17 | ↓ | 29 | 1155 | 4.0 | 1201 | X | X | X | | |
| VP-LB-102418 | 16 | 2434 | 111 | 1 | 30 | 1121 | 0.0 | 1122 | X | X | X | | Archive |


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


FORMS\COC\COCTO-15.DOC

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Karen Hotchko | Floyd Snider | 10/24/18 | 13:16 |
| Received by: | Eric Ho | F&B | 10/24/18 | 13:16 |
| Relinquished by: | | | | |
| Received by: | | | | |

1514 Taylor Way Development

# Interim Action Completion Report

# Appendix C
# Permits

# CITY OF TACOMA

Planning and Development Services
**(253) 591-5030**

747 Market St.
Tacoma, WA 98402
**Inspections (253) 573-2587**

## SITE DEVELOPMENT PERMIT # SDEV17-0042

ISSUED: 06/29/2017
**EXPIRES: 12/26/2017**

**PO Number:** 18293

| SITE INFORMATION | PARCEL OWNER | ISSUED TO |
|---|---|---|
| Parcel No.: 0321267005<br>1514 TAYLOR, TACOMA, WA 98421 | PORT OF TACOMA<br>PO BOX 1837<br>TACOMA WA, 984011837 | AVENUE 55 LLC<br>600 University St, Suite 2305<br>Seattle, WA 98101 |

**PROJECT DESCRIPTION**

| | |
|---|---|
| Avenue 55 Taylor Way<br>Grading and installation of temporary erosion control measures to prepare site for future building and site development improvements. | Total Value: $550,000.00<br>Permit Fee: $1,805.76<br>Payment Info: Check 2563 |

**CONDITIONS OF APPROVAL**

**PERMIT MUST BE KEPT ON SITE DURING CONSTRUCTION**

All plumbing, heating, and electrical work will be performed by either the home owner or by a contractor licensed to do the same. Separate permits are required for other work, including but not limited to, sanitary and storm sewer, sidewalk, curb and gutter, driveways, parking lot paving, street improvements, plumbing, mechanical, fire protection and signs.

X _____

**THIS PERMIT SHALL BECOME NULL AND VOID IF ANY OF THE ABOVE INFORMATION IS FOUND TO BE INCORRECT**

**GENERAL:**

PERMISSION IS HEREBY GIVEN TO DO THE DESCRIBED WORK, AS NOTED ON THE REVERSE SIDE, ACCORDING TO THE CONDITIONS HEREON AND ACCORDING TO THE APPROVED PLANS AND SPECIFICATIONS PERTAINING THERETO, SUBJECT TO COMPLIANCE WITH THE ORDINANCES OF THE CITY OF TACOMA.,

YOUR ATTENTION IS CALLED TO THE FACT THAT IT SHALL BE THE DUTY OF THE PERMITEE (General Contractor) to assure that all necessary inspections are called for and approved by the City Inspectors.

YOUR ATTENTION IS CALLED to the fact that in addition to the called for inspections specified by the applicable codes, the Building Official may make or require any other inspections of any construction work necessary to ascertain compliance with the provisions of City Codes and other laws which are enforced by the City of Tacoma.

YOUR ATTENTION IS CALLED to the fact that in addition to regularly scheduled inspections during construction there shall be a final inspection and approval on all buildings or structures when completed and ready for occupancy. AU required off-site improvements (curbs, sidewalks, storm sewers, etc.) must be completed at time a final inspection and prior to occupancy of building. Construction of off-site improvements requires scheduled inspections during construction in addition to the final inspection.

**SPECIAL PERMITS**

The holder of Special Permits agrees to the following stipulations:

1. To complete the work encompassed by the Special Permit in accordance with the current edition of the WSDOTIAFWA Standard Specifications as amended by the City of Tacoma General Special Provisions and in accordance with any special provisions or conditions set forth before final acceptance as required by the provisions of the Street Obstruction Bond.
2. To indemnify and hold the City of Tacoma harmless from any and all damages done to any person or property which may arise from the construction encompassed by the Special Permit.
3. To submit for review and approval to the Traffic Engineer a traffic control plan developed in accordance with the "Manual on Uniform Traffic Control Devices" {MUTCD). The traffic control plan shall show pedestrian access through the work zone.
4. To protect the public by placing adequate barricades, signs, cones, lights or other traffic control devices in accordance with the approved traffic control plan. It is understood that traffic lane closures and or sidewalk closures are limited to that which is specifically permitted herein. No other closures will be allowed without prior written approval of the City Engineer.
5. To provide and maintain protected pedestrian and ADA compliant disability access on walkways at all times.
6. The City of Tacoma does not guarantee sewer location or depth information. It shall be the permittee's responsibility to verify sewer and sewer stub locations and depths.
7. To restore Rights-of-Way in accordance with the City's Rights-of-Way Restoration Policy and City of Tacoma Standard Plans
8. Trench backfill within all improved streets or streets proposed for improvement shall be full depth bank run gravel or approved equal by the Construction Division.
9. All cuts in arterial streets shall be patched and maintained with Hot Mix Asphalt until permanent repairs are completed. All cuts in residential streets or alleys shall be patched and maintained with cold mix asphalt until permanent repairs are made. Permanent repairs shall be per current City of Tacoma Standard Plans. Streets and alleys shall be permanently repaired within 30 days.
10. To be responsible for the preservation of any utilities within the construction area.

**CALL TOLL FREE BEFORE YOU DIG -1-800-424-5555 (Utilities Underground Location Center)**

11. 24 Hour notice is required prior to any inspection. Construction Division 253-591-5760, Traffic SignaVStreetlight 253-591 -5287.
12. The Special Permit Expiration date is 30 days from the issue date unless otherwise noted.

**SPECIAL AUTHORIZATION**
**TO**
**DISCHARGE TO THE CITY OF**
**TACOMA'S**
***SANITARY SEWER SYSTEM***

In accordance with Tacoma Municipal Code section 12.08.365 and subject to the conditions contained in Chapter 12.08 and in this Authorization, the entity specified herein is authorized to discharge to the City of Tacoma's (City) *sanitary sewer system*:

17- 011
SAD No. Received by Date

Avenue 55 Bryan Ploetz 425-487-5200
Authorized Discharger, Company Representative, Phone No.

600 University Street #2305, Seattle, WA, 98101
Address of Company, Street, City, State, ZIP

Port Of Tacoma
Name of Property Owner (if different), Phone number

PO Box 1837, Tacoma, WA, 98401
Address of Property Owner, Street, City, State, ZIP

1514 Taylor Way, Tacoma
Address of Discharge Location, Street, City

## A. PURPOSE OF DISCHARGE:

Avenue 55 is developing 1514 Taylor Way involving three (3) parcels (0321267005, 0321356008, and 0321355007). This project consists of two buildings that will be built on cap material since this is a former landfill site with contaminated soils. Contact stormwater and groundwater will be kept in a temporary holding pond on site or baker tanks if more storage is needed before being sampled. If water meets City of Tacoma's local limits for the sanitary sewer, tanked water will be discharged to sanitary sewer.

## B. DISCHARGE CONDITIONS:

1. Flow Limitations and Monitoring Requirements:

   The Authorized Discharger is required to meter all discharge flows. All flows will be recorded in a log book at the construction site for City inspector review. The Authorized Discharger shall control the flow of water into the downstream system to ensure that the capacity of the City's sanitary sewer system is not exceeded as a result of the additional flows caused by the discharge. If an exceedance occurs, the discharge must be immediately discontinued and the City notified at (253) 591-5595. Discharges to the City's municipal sanitary sewer system will be on a batch discharge basis between the hours of 7:30 am to 5:00 pm only after permission has been granted by the City. If the authorized discharger requests to discharge outside of these hours, the City must be contacted and permission granted. The discharge flow rate will be limited to **60 gpm**.

2. Quality Limitations and Monitoring Requirements:

   The following discharge limitations must be met in order to discharge to the municipal sanitary sewer system:

City of Tacoma Municipal Code – Chapter 12.08.020; Chapter 12.08.040; and 40 CFR Part 136.3

| POLLUTANT | DISCHARGE LIMIT | | APPROVED ANALYTICAL METHOD | | |
|---|---|---|---|---|---|
| | | | *EPA Method* | *Standard Method* | *ASTM* |
| Total Arsenic | 0.1 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Cadmium | 0.25 | mg/L | 200.5; 200.7; 200.8 | | |
| Total Chromium | 1.0 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Hexavalent Chromium | 0.25 | mg/L | | | |
| Total Copper | 1.0 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Cyanide | 0.64 | mg/L | | 4500B; 4500C | |
| Free Cyanide | 0.2 | mg/L | | | D7237-10; D4282-02 |
| Total Lead | 0.4 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Mercury | 0.05 | mg/L | 245.1; 245.2; 245.7; 1631E | | |
| Total Molybdenum | 1.0 | mg/L | 200.5; 200.7; 200.8 | | |
| Total Nickel | 1.0 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Selenium | 0.1 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Silver | 0.2 | mg/L | 200.5; 200.7; 200.8; 200.9 | | |
| Total Zinc | 2.0 | mg/L | 200.5; 200.7; 200.8; 282.2 | | |
| Total Petroleum Hydrocarbons | 50 | mg/L | 1664A; 1664B *(measured as silica gel treated, hexane extractable materials (SGT-HEM)* | | |
| pH | 5.5 - 11.0 | | 150.2 | 4500H$^{+}$B-2000 | |
| Total Suspended Solids | 225* | mg/L | | 2540 D – 1997 | |
| Total Toxic Organics** | 2.13 | mg/L | 624; 625 | | |
| BETX*** | 10 | mg/L | 624 | | |

*The Total Suspended Solids value of 225 mg/L is a benchmark. Any amount over and above may be used for billing purposes. **The Sum of all Total toxic organics with 0.1 mg/L or greater cannot exceed 2.13 mg/L. ***Benzene may not exceed 0.5 mg/L

The Authorized Discharger must obtain samples and receive analytical data prior to requesting permission to discharge. After the sample analysis has been completed and the results indicate no violations of the parameters above, permission to discharge may be requested from Source Control. **Discharging without prior permission from Source Control is prohibited.**

The Authorized Discharger must observe the discharge for unusual color, odor and/or sheen. If any of these conditions are present, the discharge must be immediately discontinued and the City of Tacoma notified at (253) 591-5595.

## C. DISCHARGE LOCATION:

The discharge will be into an existing private sanitary sewer located on parcels 0321267005, 0321356008, and 0321355007; once new private sanitary manholes are installed on parcel 0321355007, discharge will be to those.

## D. OTHER CONDITIONS:

1. The Authorized Discharger must possess a valid NPDES permit from the Department of Ecology and/or the Environmental Protection Agency, if applicable, and operate in compliance with that permit as determined by the issuing agency
2. The City of Tacoma reserves all of the powers set forth in Chapter 12.08 TMC, as well as any other applicable powers granted by the Tacoma Municipal Code, state and/or federal law to enforce the terms of the Authorization, and to regulate the use of its municipal sewer system including, but not limited to, seeking supplemental charges under TMC 12.08.610.
3. The Authorized Discharger must pay the applicable fees and maintain payments as provided for in Tacoma Municipal Code Chapter 12.08.
4. The Authorized Discharger must cease discharge when:
   a) A violation is suspected or detected, of any of the discharge conditions specified in B. above; or
   b) When directed to by the City.
5. The Authorized Discharger may be required to reduce the flow rate of the discharge, or cease discharging during heavy rainfall events which may over burden the sanitary sewer system.
6. The Authorized Discharger must deliver a letter to the City at the office of Environmental Compliance Support, 2201 Portland Ave, Tacoma, 98421, (FAX

   (253) 502-2295) within 5 calendar days of any exceedance of the discharge conditions specified in B. above, explaining the limitations exceeded, the cause, the measures taken to mitigate it and to prevent reoccurrence.
7. The Authorized Discharger must submit a new application and pay an application fee for discharges that exceed twelve (12) months in duration.
8. This Special Approved Discharge (SAD) authorization is issued solely to the authorized discharger named in section one above. Authorization to discharge to the City's sanitary sewer system is not transferrable without the City's written consent.

## E. BILLING:

The Authorized Discharger must keep records of each batch discharge, monitoring results, volume, date, and time in a log book kept on site for inspector review. The discharge records must also be submitted to the City of Tacoma for billing purposes on a monthly basis. Monthly reporting is due by the 15th of each following month. If no discharge occurred then a report stating that there was no discharge must be submitted. The Authorized Discharger must notify this office, in writing, upon project completion for final billing.

**F. ENFORCEMENT:**

Violations of this Authorization or of Tacoma Municipal Code Chapter 12.08 may be subject to Notices of Violation w/Civil penalties of up to $5000.00 per violation per day.

**G. TERM OF AUTHORIZATION:**

This Special Approved Discharge Authorization expires one year from the date of issuance. To extend this SAD, please submit an application at least one month prior to expiration.

**ON BEHALF OF THE CITY OF TACOMA**

Dan C. Thompson, Ph.D.
Business Operations Division Manager
Environmental Services

6-29-17
Dated

**The 24-hour emergency telephone number for City of Tacoma Sewer Transmission Operation and Maintenance is (253) 591-5595.** The regular business hours (Mon-Fri 8:00 A.M. to 4:30 P.M.) number is (253) 591-5588. FAX (253) 502-2295

Tacoma - Pierce County
**Health Department**
*Healthy People in Healthy Communities*
www.tpchd.org

# No. 2155

## WASTE DISPOSAL AUTHORIZATION

Tacoma Pierce County
Health Department

9/18/2017 10:02:49 AM
Clerk 62-T2
Waste Disposal Auth Initial
$165.00
Receipt #476952
v012438 Andrew Zaborowski #2165

**(XX) Non-Asbestos** **( XX ) New**

( ) Asbestos (PSCAA Case # _____) ( ) Amendment

A. Generator Name: Avenue 55, LLC

B. Generator Address: 1514 Taylor Way, Portside 55 North Development, Tacoma WA

C. Transporter Name: Sierra Construction Company

D. Technical Contact: Tom Colligan (Floyd|Snider Inc.) Phone: 206-292-2078

E. Waste Description: Petroleum contaminated soil

( ) Sludge ( **XX** ) Solid **(XX)** PCS ( ) Other

F. Approved Quantity: **4000 Tons**

G. **Actual Quantity (Filled in upon disposal):** _____

H. Multiple Loads: ( **XX** ) Yes ( ) No

I. Dates of Disposal: **September 15, 2017 through December 31, 2017**

J. Testing: PCBs, TPH-G, TPH-DX, metals, SVOCs, VOCs

K. Reviewed by Department of Ecology: () Yes **(XX)** No

L. Disposal/Transportation Requirements: **A copy of this WDA must be transported with EACH load of waste and presented to the LRI Landfill Scalehouse Operator.** Soils demonstrating excessive odors are not suitable for use as daily cover and shall be directly buried (disposed of) in the landfill. If odors are not excessive and the soils physical characteristics are suitable for utilization as a daily cover then the soils may be used as alternative daily cover. Loads shall be covered during transport to the landfill to prevent fugitive emissions of contaminated soils. Load sizes shall comply with conditional-use and solid waste permit criteria. Wastes may have no free liquids. Generator shall add bulking agents to waste if needed, to absorb free liquids.

M. Facility: **( XX ) LRI Landfill (304th Street LF), 30919 Meridian Street, Eatonville, WA**

### CERTIFICATION

I hereby certify that I have personally examined and am familiar with the information submitted in this document and any supporting material. Based on my inquiry of those individuals immediately responsible for obtaining the information, the information submitted is true, accurate and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. I agree that the generator and/or transporter will abide by all conditions specified in line (L) or any attachments thereto.

9/18/17 DEV. MANAGER _____
Date Title Signature

**AUTHORIZED BY:**

Keith Johnston, TPCHD (253) 798-6561

Cc: LRI LF Scalehouse via Fax – 253 875 7205

**APPROVED**

SEP 15 2017

TACOMA-PIERCE COUNTY HEALTH DEPT.
ENVIRONMENTAL HEALTH DIV.
For Official Use Only

# Waste Disposal Authorization Application

Tacoma-Pierce County Health Department
*Healthy People in Healthy Communities*

We require the information below to determine if this waste is acceptable for disposal at the City of Tacoma Landfill, the LRI Landfill, the Wm Dickson Waller Road Landfill, or other permitted solid waste facilities. It is unlikely that you will be able to respond in the space provided. Feel free to modify the format or address the information on additional pages. Include all the information requested below and email, fax or mail to:

| |
|---|
| Date<br>September 13, 2017 |
| Site/Generator Name<br>1514 Taylor Way, Portside 55 North Development, Tacoma WA |
| Site Owner Name<br>Avenue 55 LLC |

Email ehsolidwaste@tpchd.org
Fax (253) 798-6498
Tacoma-Pierce County Health Department
3629 South D Street MS 1045
Waste Management
Tacoma, WA 98418-6813

| |
|---|
| Describe Where Waste Originated (site address, physical location, company name, project name, etc.)<br><br>Waste lumber mixed with soil from construction site on the tideflats- 1514 Taylor Way. |
| Transporter Name<br>Sierra Construction Company |
| Technical Contact/Consultant Name<br>Tom Colligan, Floyd\|Snider INc |
| Proposed Solid Waste Disposal/Treatment Facility<br>LRI |
| Describe the Site History (if applicable)<br><br>former Mutual Fir and Buffelen door manufacturing site, also used by Lindal Cedar Homes- lots of waste lumber. One section of the site was part of the adjacent Don Oline landfill. |
| Describe How Waste is Generated/Source of Waste<br><br>Near surface grading revealed lots of waste lumber (see photo) mixed with soil, this material is unsuitable for base course for pavement and so must be excavated to allow placement of quality fill soils. |
| Projected Quantity or Volume of Waste (tons or cubic yards generated per month, quarter, year, once, etc.)<br><br>2,500 cubic yards maximum |
| Describe the Sampling Method(s) and/or Submit Sampling Plan<br><br>Soils already extensively sampled as part of an Ecology RI.FS. Soil samples collected at over 30 locations, over 100 samples analyzed for VOCs, TPH, SVOCs, metals and PCBs. Only contaminant above MTCA was TPH and metals. See table 5.2 in Ecology-approved Interim Action Work Plan. Table 5.2 lists maximum contaminants levels in soil |
| Describe and Justify the Number of Samples per Volume of Waste<br><br>The area of the site where the waste lumber was found is along the west (see attached figure), this area was sampled by Test Pit locations 1, 2, 3, 4, 12, 17. Two samples per test pit, so 10 samples in total. That is one sample for every |
| Describe and Justify the Parameters Selected for Analysis<br>Samples analyzed for PCBs, TPH-G, TPH-DX, metals, SVOCs, VOCs. Results attached. |

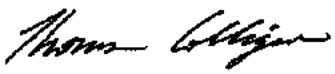
# Waste Disposal Authorization Application

Tacoma-Pierce County Health Department
*Healthy People in Healthy Communities*

**Please attach or enclose:**

- analytical results
- chain of custody forms
- a sampling plan
- any other documents relevant to the review of the site, facility and/or waste being characterized

By my signature below, I certify that the information presented in this application is true and complete to the best of my knowledge.

| | |
|---|---|
| Applicant Name<br>Tom Colligan | Applicant Title<br>Licensed Geologist, State of Washington |
| Applicant Signature<br>  | Date<br>9/13/2017 |
| Company Name<br>Floyd\|Snider Inc. | Company Address<br>601 Union Street, Seattle WA Suite 600, 98191 |
| Phone Number<br>206-292-2078 | Fax Number |
| Email Address<br>tom.colligan@floydsnider.com | |

1514 Taylor Way Development

# Interim Action Completion Report

# Appendix D
# Photographs

Photograph 1. Preconstruction Site Conditions. Looking south, existing surcharge pile in background.

Photograph 2. Dynamic Compaction Impact Craters. Looking South

Photograph 3. Wood debris found in soil at the North west edge of property. Looking South

Photograph 4. Covered stockpile of wood debris.

Photograph 5. Wet site conditions during initial methane and VOC vapor survey in April 2018. Stormwater Pond in Background, Looking North

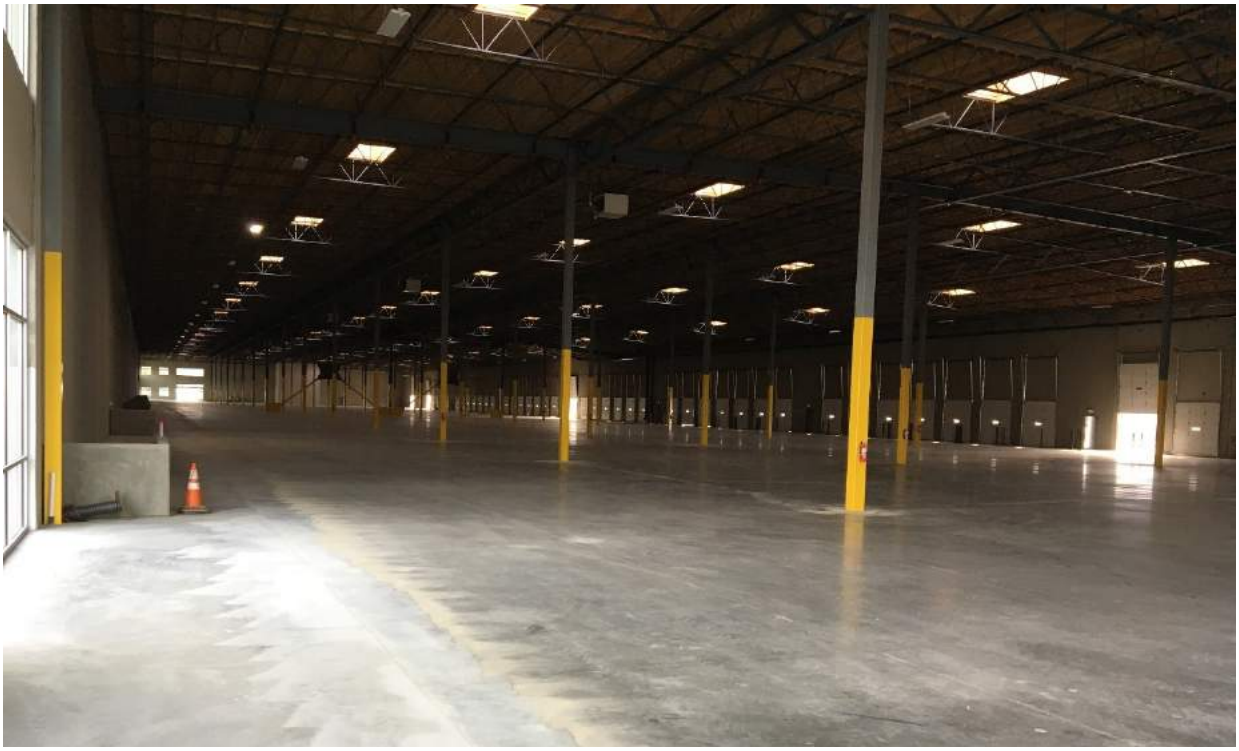
Photograph 6. Stormwater pump brought in to control excess water in the stormwater pond. Looking South

Photograph 7. Site conditions during second VOC vapor sampling event in May 2018.

Photograph 8. Vapor sampling set up in May 2018.

Photograph 9. VOC vapor sampling equipment.

Photograph 10. Excavation of perimeter footing around recently poured floor.



Photograph 11. Looking East in finished floor slab of Building A.

Photograph 12. NE Office Node of Building A. Passive Vapor Mitigation system located under slab.

Photograph 13. Typical Vapor Pin installed in Building A and B.

Photograph 14. Vapor Points VP-12 and VP-13 after installation.