

# Remedial Action Progress Report Third Quarter, 2018

Phoenix Quick Stop  
4046 Butler Street (State Route 308)  
Clinton Township, Venango County, Pennsylvania

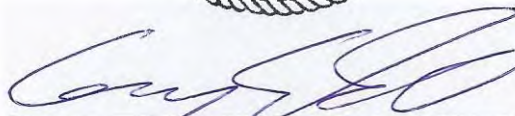
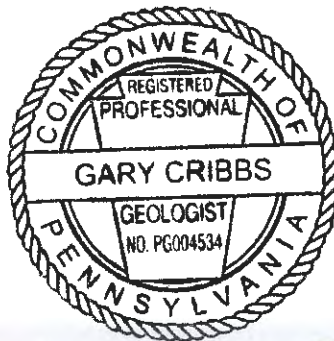
PADEP Facility ID # 61-14660  
USTIF Claim # 2015-0127

Prepared for:  
Harper Oil Company / Heath Oil Company

Prepared by:  
  
*Associates, Inc.*

P.O Box 44  
Delmont, PA 15626  
888-316-0211

October 25, 2018

  
\_\_\_\_\_  
Gary Cribbs P.G.  
Principal

**Table of Contents**  
Remedial Action Progress Report  
Third Quarter 2018  
Seneca Mini Mart, 3390 State Route 257  
Seneca, Venango County, Pennsylvania  
PADEP Facility I.D #61-18854

1.0 Introduction .....	1
2.0 Remedial Activitiesy .....	6
2.1 Product Recovery Actions .....	6
2.2 Additional Soil and Groundwater Characterization .....	7
2.3 PennDOT Permit .....	8
3.0 Quarterly Groundwater Monitoring Activities .....	9
3.1 Static Water Level Measurements .....	9
3.2 Groundwater Sampling Activities.....	9
3.3 Purge Water Disposal.....	10
4.0 Monitoring Results.....	10
4.1 Groundwater Elevations and Flow Directions .....	10
4.2 Groundwater Analytical Results.....	11
5.0 Summary .....	13

Tables

Table 1	Product Recovery
Table 2	Soil Analytical Results
Table 3	Historic Groundwater Elevation Data
Table 4	Historical Groundwater Analytical Results

Figures

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater Contour Map – August 8-9, 2018
Figure 4	Groundwater Analytical Results Map – July 23, 2018

Appendices

Appendix A	Soil Boring and Monitoring Well Logs
Appendix B	Laboratory Analytical Report

## 1.0 Introduction

The Seneca Mini Mart (Site or Subject Property) is located at 3390 State Route 257, Seneca, Venango County, Pennsylvania. The Subject Property is located on the east side of State Route 257, approximately two hundred feet south of the intersection of State Route 257 and Bredinsburg Road/East State Road (State Route 2006). Site access is from State Route 257 along the west side of the property. A Site Location Map is provided as **Figure 1**.

The Subject Property was formerly operated as a fuel retail and convenience store facility, recently as an automobile repair facility and is currently vacant. The Seneca Mini Mart occupies the northern half of the 0.78 acre parcel (Parcel ID 08-39-13), owned by Daniel Heath. The balance of the parcel was formerly occupied by Seneca Motors, a used car sales lot. Harper Oil and Heath Oil Inc. (Harper Oil's parent company) also owns several of the immediately adjoining properties to the north (Hinzeman), east (Winger) and southeast (Heath) through various subsidiaries.

The Subject Property includes a single building of approximately 3,932 square feet and a single 576 square foot canopy with a single dispenser island. Two unleaded gasoline dispensers were formerly located under the canopy. Storm sewer, natural gas, water, and sanitary sewer underground utility lines servicing the Subject Property and the vicinity are indicated on **Figure 2**.

A separate dispenser for diesel fuel and kerosene was formerly located south of the Subject Property structure. The underground storage tanks (USTs) associated with the dispensers were buried to the southeast of the dispensers and included; Tank 001 (6,000-gallon UST containing premium unleaded gasoline), Tank 003 (10,000-gallon UST containing unleaded gasoline), Tank 004 (2,000-gallon UST containing diesel fuel) and Tank 005 (1,000-gallon UST containing kerosene). Former Tank 002 (4,000-gallon unleaded gasoline UST) had been removed from the Site on February 11, 1999. Also, present at the facility was a 1,000-gallon above ground storage tank containing off-road diesel fuel equipped with a single dispenser.

These four USTs and associated dispensers were recently removed as part of the closure of the retail gasoline facility. The USTs were removed between September 14 and 17, 2015 by John Koziara of Koziara Trucking and Excavating. It is the former UST system and associated dispensers under the canopy that were removed that are the focus of the Site Characterization.

Obvious contamination was observed during the removal of the product piping and the dispensers. Impacted soil was only detected in the soil confirmation samples collected from under the dispensers and along the product lines leading from the dispensers back towards the USTs. No groundwater was encountered during the removal of the four USTs. PADEP was notified of the release on September 14, 2015 and a Notification of Reported Release form was submitted on September 16, 2015.

Confirmatory soil samples collected from below the product dispensers and along the product line trenches indicated that naphthalene and 1,2,4-TMB exceeded their respective soil to groundwater residential used aquifer (RU) and non-residential used aquifer (NRU) Statewide Health Standard (SHS) Medium Specific Concentrations (MSCs).

As part of the UST removal, a total of 109.16 tons (Koziara estimated 350 tons) of petroleum-contaminated soil was removed from the UST excavation, product lines and dispensers and encapsulated in 6-mil plastic. The contaminated soil subsequently properly disposed at a PADEP approved landfill.

The impacts associated with the removed UST system are being addressed under the Title 25–Environmental Protection (25 PA Code), Chapter 245 (Administration of the Storage Tank and Spill Prevention Program). The eligibility of the funding through the UST Indemnification Fund (USTIF) for the Seneca Mini Mart facility was approved on June 6, 2016.

The site characterization investigation was conducted by Cribbs & Associates, Inc. (Cribbs & Associates), which included advancing 23 soil borings and installing 15 monitoring wells. Soil borings SB-1 through SB-6 were advanced on April 28, 2016 along the path of the product line and in the vicinity of the dispenser island. On June 14, 2016, Cribbs & Associates advanced 11 additional soil borings (SB-7 through SB-17) covering the area between the previous soil borings and State Route 257 at the locations shown on **Figure 2**. Cribbs & Associates installed five monitoring wells, (MW-1 through MW-5) at the locations shown on **Figure 2** on July 8, 2016. The wells were installed with MW-1 located along the former product line between the former UST basin and the dispenser island. Monitoring wells MW-2 through MW-5 were located in a line running from south to north along the western property boundary. On September 14, 2016 Cribbs & Associates advanced six additional soil borings (SB-18 through SB-20 and SB-22 through SB-24) stepping out towards the north and south of the previous soil borings along State Route 257. Monitoring wells MW-6, MW-7 and MW-9 through MW-11 were installed on October 17 and 18, 2016 in an attempt to delineate the northern, eastern and southern boundary of the groundwater impacts previously identified. Monitoring well MW-8 was installed on November 1, 2016.

After negotiating access to the Seneca Lawn & Landscape property on the west side of State Route 257, three off-site monitoring wells (MW-12 through MW-14) were installed on January 24 and 25, 2017 to delineate the western boundary of the groundwater impacts previously identified and to evaluate if the groundwater impacts are reaching the unnamed tributary to Lower Twomile Run.

Monitoring well MW-15 was installed on May 24, 2017 to delineate the eastern boundary of the groundwater impacts previously identified following the appearance of MTBE in monitoring well MW-8 in the groundwater samples collected on March 29 and April 2, 2017.

The soil cuttings generated during the soil sampling and monitoring well installation activities through July 2016 were added to the impacted soil stockpile created during the UST system removal in September 2015. Sampling of the impacted soil stockpile was conducted on June 23, 2016 and a Form FC-1 for the disposal of soil impacted with unleaded gasoline was submitted to a Waste Management's Northwest Sanitary Landfill in West Sunbury, Butler County, PA for approval. On August 24, 2016, 109.16 tons of impacted soil were transported to the Northwest Sanitary Landfill for disposal.

Soil cuttings generated during the installation of monitoring wells MW-6 through MW-15 were placed in 55-gallon DOT drums and stored on the Subject Property. Following the analysis of the soil samples obtained from these wells that documented that none of the contaminants of concern exceeded their respective RU SHS MSCs the soil cuttings were spread on-site.

On October 4, 2016, liquid phase hydrocarbons (LPH) was observed in monitoring well MW-3 and product recovery efforts were initiated. By March 7, 2017 LPH sheen had been observed in MW-1 through MW-5, although measurable thicknesses of LPH have only been recorded in MW-3 and MW-4. Adsorbent socks were placed in the wells that indicated the presence of LPH and are changed periodically. **Table 5** provides the history of LPH product recovery.

Cribbs & Associates performed multiple groundwater sampling events at the Subject Property as part of the site characterization activities. The first of these sampling events are only partial events because the initial groundwater samples were collected from wells MW-1 through MW-5 after they were installed. Monitoring wells, MW-1, through MW-5 were initially sampled on July 12, 2016. On October 4, 2016 monitoring wells MW-1 through MW-5 were each sampled for the second time. Monitoring wells MW-8, MW-9 and MW-10 were sampled for the first time on December 6, 2016. Monitoring wells MW-6, and MW-7 were delayed because a car under repair and a pile of firewood blocked access to these wells. MW-6 and MW-7 were sampled for the first time on January 17, 2017. Monitoring well MW-11 was slow to make water, as evidently clay material in the well had become smeared across the water bearing zone during the drilling operations and did not allow for a sufficient volume of water to be sampled until February 22, 2017. The off-site monitoring wells MW-12 through MW-14 were initially sampled on February 1, 2017. The first sampling event to include all fourteen monitoring wells in one sampling event was conducted on March 28 and 29, 2017. Monitoring well MW-15 was initially sampled on June 12, 2017 and the follow up sampling was conducted on July 31, 2017.

The early sampling events, July 12, 2016 and October 4, 2016, with only the initial five monitoring wells present indicates that shallow groundwater flow direction was generally to the west, influenced primarily by the surface topography with flow generally towards the unnamed tributary to Lower Twomile Run located on the opposite side of State Route 257.

The later groundwater flow maps based on the January 17/February 1, 2017, March 28-29, 2017 and June 12, 2017 sampling events, with fourteen and fifteen monitoring wells present indicates that shallow groundwater flow is a radial pattern centered on the dispenser islands and also slopes generally to the west, influenced by the surface topography with flow generally towards the unnamed tributary to Lower Twomile Run.

The groundwater elevations observed in monitoring wells MW-1 through MW-5 in the vicinity of the dispenser islands indicate that the fill material beneath the dispenser islands is likely acting as a “bathtub” holding perched groundwater in the fill material with the less conductive native materials keeping the perched groundwater in place. The removal of the dispensers allowed the precipitation draining from the canopy to infiltrate the “bathtub” creating significant mounding in the area containing fill material.

Benzene, ethylbenzene, toluene, total xylenes, MTBE naphthalene, 1,2,4-TMB and 1,3,5-TMB were observed at concentrations that exceeded their respective RU SHS MSCs in one or more wells. Monitoring wells MW-1 through MW-5 typically indicated the highest concentrations of the contaminants of concern. The highest concentrations of benzene (17,800 µg/l, October 4, 2016), ethylbenzene (4,410 µg/l, March 29, 2017), toluene (10,500 µg/l, July 12, 2016), total xylenes (23,900 µg/l March 29, 2017), 1,2,4-TMB (4,920 µg/l, March 29, 2016) and 1,3,5-TMB 1,590 µg/l, March 29, 2017) were observed in MW-3. The highest concentration naphthalene (4,470 µg/l, June 13, 2017) was observed in MW-5.

MTBE was observed in MW-8 ranging from <5.0 µg/l (December 6, 2016) to 520 µg/l (June 12, 2017) and was the driving factor for the installation of MW-15 in May 2017 to complete the delineation to the east.

Benzene, MTBE and 1,2,4-TMB have also been observed in MW-10 at concentrations exceeding their respective SHS MSCs, with decreasing concentrations of benzene and 1,2,4-TMB observed over four sampling events and a single exceedance for the MTBE in that well.

None of the contaminants of concern have been detected above the laboratory method detection limits in the off-site monitoring wells (MW-12, MW-13 and MW-14) or the stream samples collected from the unnamed tributary to Lower Twomile Run

Two soil vapor points (VP-1 and VP-2) were installed adjoining the Site structure as indicated on **Figure 2**. Each soil vapor point was sampled on October 4, 2016 and May 3, 2017. Analytical results of the soil vapor sampling indicated that minor concentrations of benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB were detected; however, none of the soil vapor samples exhibited concentrations in excess of their respective, most stringent of the screening values (SSS non-residential sub-slab).

Slug tests were conducted on monitoring wells MW-1, MW-2 and MW-4 on September 1, 2016 to provide hydrogeologic data for contaminant migration evaluation during fate and transport

modeling. Because these initial slug tests were all conducted on monitoring wells located near the dispenser islands and, therefore, in predominantly fill material, additional slug tests were conducted on September 7, 2017 on monitoring wells MW-10 and MW-11 to evaluate the hydraulic conductivity of the wells installed in mostly natural unconsolidated soils. Both falling head and rising head tests were conducted on the selected monitoring wells, although the falling head test for MW-10 was not successful. The geometric mean of the derived hydraulic conductivities for the three wells in the vicinity of the dispenser island (fill material), is 1.1 ft./day or  $5.71\text{E}^{-4}$  cm/sec. The geometric mean of the hydraulic conductivities derived for the two well installed in native soils is 0.128 ft./day or  $4.51\text{E}^{-5}$  cm/sec.

Using the calculated hydraulic gradient of 0.079 ft./ft. for the shallow wells, the hydraulic conductivity geometric means listed above, and an estimated effective porosity of 35 percent for unconsolidated soil and fill, a groundwater seepage velocity (average linear velocity) of 0.2492 ft./day has been calculated for the shallow unconsolidated aquifer installed in the fill material surrounding the dispenser island. A groundwater seepage velocity of 0.02886 ft./day was calculated for unconsolidated aquifer installed in the native soil.

Fate and transport modeling (Quick Domenico) was conducted for the contaminants of concern (COC). Quick Domenico modeling predicted that benzene was the only COC that could potentially migrate off-Site with the benzene contaminant plume extending west to the nearest downgradient sensitive receptor, the unnamed tributary to Lower Twomile Run.

In accordance with Title 25 of the Pennsylvania Code, Chapter 245.310, Cribbs & Associates submitted a Site Characterization Report (SCR) on September 13, 2017 and a Remedial Action Plan (RAP) on November 10, 2017. The selected cleanup goal for soil at the Site is the non-residential, used aquifer SHS. Due to the mixed classification for properties beyond the Subject Property, the cleanup standard applied to meet the required goal for groundwater cleanup is the residential, used aquifer SHS.

As reported in the SCR, extensive soil and groundwater contamination remains in the vicinity of the dispenser island. Given that the extent of soil impacts under State Route 257 was unknown, the RAP recommended additional soil sampling along the shoulder of the highway and, if needed in the center turning lane. A soil excavation was proposed to address the known soil impacts and would involve removing an estimated 1,250 cubic yards of impacted soil above the RU SHS MSCs along approximately 140 feet of frontage.

Concurrent with the proposed soil borings an additional monitoring well, MW-16 is to be installed in the turning lane of State Route 257 to better evaluate the extent of groundwater impacts under the highway and to more effectively calibrate the fate and transport models for contaminants of concern migrating towards the unnamed tributary to Lower Twomile Run.

Following the soil excavation activities, if the soil attainment cannot be demonstrated via post excavation confirmation soil samples, random systematic soil sampling may be conducted following the completion of the remedial activities to document attainment of the NRU SHS MSCs. The proposed soil excavation activities will also remove monitoring wells MW-1 through MW-5 where the LPH and the highest concentrations have been observed in the groundwater for the majority of the contaminants of concern.

Based on the site characterization results, groundwater data obtained from the Site monitoring wells; benzene, ethylbenzene, toluene, total xylenes, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB concentrations have been detected in the groundwater at concentrations that exceed their respective RU/NRU SHS MSCs. Following the removal of the impacted soil and the subsequent replacement of the monitoring wells in the excavated area, a minimum of eight post-remediation groundwater sampling events will be required to statistically demonstrate attainment for these parameters.

The SCR and RAP were approved by PADEP on January 8, 2018. Remedial Action Progress Reports (RAPRs) are required to be submitted to the PADEP in accordance with Section 245.312(b-d) by the 30 day of the month following the end of each quarter.

As part of the additional soil and groundwater characterization proposed in the RAP, nine soil borings (SB-27 through SB-35) and two monitoring wells (MW-16 and MW-17) were advanced and sampled during the second quarter of 2018. Benzene concentrations exceeding the RU/NRU SHS MSC for soil were observed in SB-29 and SB-31. Benzene and 1,2,4-TMB concentrations exceeding their respective RU/NRU SHS MSCs for groundwater were observed in MW-17. These observations necessitated the installation of two additional soil borings/monitoring wells during the Third Quarter of 2018.

This RAPR discusses the findings of the additional characterization activities and results of the groundwater sampling event conducted during the Third Quarter 2018

Cribbs & Associates was contacted by the USTIF Administrator to notify that the remedial actions were being put out for competitive, fixed price bid. Therefore, any further site characterization or remediation activities have been put on hold indefinitely, pending the award of the Site by USTIF. However, the continuation of quarterly groundwater monitoring activities will proceed as required.

## **2.0 Remedial Actions**

### **2.1 Product Recovery Actions**

LPH Product Recovery efforts have continued since the SCR was submitted (September 13, 2017), and coincided with the Third Quarter 2018 groundwater sampling event. The product



recovery efforts, initially conducted twice a month, have decreased in frequency and were conducted only once this quarter (August 9, 2018).

Historically, LPH has been observed on the surface of the water table in monitoring wells MW-1 through MW-5. Typically, the LPH is present as a slight to heavy sheen. Monitoring well MW-3 typically exhibits the heaviest sheen, containing small globules of petroleum product. Measurable product has been observed in MW-3 during several monitoring events, and only once in MW-4.

During the August 9, 2018 product recovery event, no measurable product was observed and only a moderate sheen was observed in monitoring well MW-3. No sheen was observed in monitoring wells MW-1, MW-2, MW-4, and MW-5. A fresh absorbent sock was installed in MW-3 on August 9, 2018. Adsorbent socks have been maintained in the five monitoring wells where LPH has been observed and have been changed as they become saturated.

**Table 1** presents the history of the product recovery efforts and includes the date of the product recovery, measured LPH thickness, if water and/or LPH was bailed/removed, and if the adsorbent socks were changed. The estimated LPH removed from all wells through the Third Quarter 2018 is 9.74 gallons.

The water bailed during the product recovery efforts is placed in the 55-gallon DOT-approved drum used to store purge water from the groundwater sampling events. The spent socks are drummed separately, pending off-site disposal.

## **2.2 Additional Soil and Groundwater Characterization**

As proposed in the PADEP-approved RAP, additional soil and groundwater characterization was conducted in the shoulder and center turning lane of State Route 257 during the Second Quarter 2018.

The impacts observed in previously installed soil boring SB-35 and monitoring well MW-17 lead to the installation of two additional soil boring/monitoring well locations (SB-36/MW-18 and SB-37/MW-19) to the north and west of SB-35 and MW-17. The existing Pennsylvania Department of Transportation (PennDOT) permit was modified to add the location of SB-36/MW-18 in the turning lane of State Route 257. **Figure 3** presents the locations of the additional soil borings and monitoring wells. The soil boring logs and monitoring well installation details are presented in **Appendix A**

As with all subsurface activities, Pennsylvania One-Call was notified greater than 72-hours prior to the proposed activities to clear the proposed work area for buried utilities. The activities that occurred in the right-of-way (ROW) of State Route 257 utilized Area Wide Protective to provide traffic control in accordance with the PennDOT permit requirements.

The additional site characterization activities completed in this quarter are detailed below:

- September 13, 2018 – Soil Boring SB-36 was advanced in the center turning lane of the road to a depth of 10 feet below ground surface (bgs). One soil sample was collected from 5 to 6 feet bgs. Monitoring well MW-18 was installed at the location of SB-36. MW-18 is 2-inches in diameter with a screened interval from 3 to 10.0 feet bgs. The sand filter pack extended approximately 1-foot above the top of the screen. A 1.5-foot seal of bentonite pellets created a seal with bentonite chips filling the annulus to just below the ground surface. A flush-mount protective cover was installed in a concrete pad at the ground surface.
- Soil boring SB-37 was advanced on the west side of State Route 257. Because this boring was located beyond the curb, and on a steep slope down towards the unnamed tributary to Lower Two-Mile Run, the boring was advanced using a hand auger to a depth of 4.2 feet bgs. Screening of the soils encountered did not indicate elevated PID readings; therefore, no soil sample was collected from this boring.
- Monitoring well MW-19 was installed at the location of SB-37. MW-19 is 2-inches in diameter with a screened interval from 1 to 4.2 feet bgs. The sand filter pack extended approximately 0.5-foot above the top of the screen. A 0.5-foot seal of bentonite pellets created a seal to just below the ground surface. A flush-mount protective cover was installed in a concrete pad at the ground surface.

The soil sample collected on September 13, 2018 from SB-36 was submitted to Pace Analytical Services and analyzed for the PADEP post-March 2008 shortlist of unleaded gasoline parameters. The soil analytical results were below the laboratory method detection limits for all parameters and are included in **Table 2**.

- September 19, 2018 – Monitoring wells MW-18 and MW-19 were developed. Development water was placed into 55-gallon drums pending transport to the Barkeyville facility for disposal.
- September 27, 2018 - Groundwater samples were collected from MW-18 and MW-19 and submitted to Pace Analytical Services for analyses of PADEP post-March 2008 shortlist of unleaded gasoline parameters. The groundwater results from MW-18 and MW-19 are discussed in **Section 4.0** and included in **Table 4**.

### 2.3 PennDOT Permit

The Right-of-Entry agreement to conduct the proposed soil sampling, monitoring well installation, and soil excavation activities in the right-of-way and roadway of State Route 257 was obtained from PennDOT on March 6, 2018.

Based on the benzene exceedance observed in the soil results for SB-31, the conversion of SB-31 to monitoring well MW-17, an additional soil boring SB-35 was added to the existing permit following discussions with Mr. Kyle Riffle Permit Manager for PennDOT Engineering District 01-0 and the submittal of a revised figure showing the additional soil boring locations. Mr. Riffle approved the modifications on May 8, 2018.

Following the results obtained from the June 6, 2018 soil sampling of SB-35, and the June 22, 2018 groundwater sampling of MW-17, the PennDOT permit was modified again to add one additional soil boring/monitoring well (SB-36/MW-18) north of SB-35.

### 3.0 **Quarterly Groundwater Monitoring Activities**

The groundwater monitoring event for Third Quarter 2018 was conducted on August 8 and 9, 2018. Sixteen monitoring wells (MW-1 through MW-13, and MW-15 through MW-17) and two surface water samples (Upstream and Downstream) were sampled during this quarterly groundwater sampling event. Monitoring Well MW-14 did not contain sufficient water to sample on August 8 or 9, 2018. The location of the wells, the stream samples, and other pertinent Site features are presented on **Figure 2**.

#### 3.1 Static Water Level Measurements

Prior to conducting groundwater sampling activities, static groundwater level measurements were obtained from each monitoring well in order to calculate groundwater elevations. These groundwater elevations were used to determine the volume of water in the well, as well as for the construction of groundwater flow maps for the shallow aquifer. **Table 2** presents the depth to groundwater measurements and the calculated groundwater elevations for the quarterly monitoring event.

#### 3.2 Groundwater Sampling Activities

Groundwater samples were collected from all Site monitoring wells using low-flow pumping techniques as prescribed in the technical guidance manual “*Standard Operating Procedure for Low-Stress (Low-Flow)/Minimal Drawdown Ground-Water Sample Collection*” and referenced from the USEPA Groundwater Issue Paper “*Low-Flow (Minimal Drawdown) Groundwater Sampling Procedure*”, by Robert W. Puls and Michael J. Barcelona.

Prior to sampling, the monitoring wells were purged using a micro-purge, low-flow, stainless steel submersible air lift (bladder) pump. Each well was purged using dedicated polyethylene tubing

and a dedicated pump bladder. As the wells were purged, the discharge water was pumped through a low-flow analysis chamber with a multi-parameter water quality sensor until all parameters (temperature, specific conductance, dissolved oxygen [DO], pH, and oxygen reduction potential [ORP]) had stabilized in accordance with the USEPA criteria.

Once the parameters had stabilized, the low-flow analysis chamber was removed and samples were collected directly into laboratory-supplied, pre-preserved sample containers with the appropriate preservatives. The samples were immediately placed on ice and delivered to Pace Analytical Services in Greensburg, Pennsylvania under proper chain-of-custody protocol. The samples were received by the laboratory in acceptable condition, and ice was present in the cooler at the time of delivery. The samples were analyzed for the PADEP post-March 2008 shortlist of unleaded gasoline parameters, which includes benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene, 1,2,4-TMB, 1,3,5-TMB, and total xylenes.

### 3.3 Purge Water Disposal

The drum containing LPH recovery water generated since the November 16, 2017 shipment, Development water from monitoring wells MW-17, MW-18 and MW-19, and the purge water from the First, Second, and Third Quarter 2018 sampling events remains on site. The petroleum contaminated groundwater will be transferred to a vacuum truck and/or transported to the Heath Oil Bulk Terminal in Barkeyville, Pennsylvania and processed through their water treatment system. Several empty drums will remain on-site to be used for containing water generated during future product recovery and groundwater sampling events.

## 4.0 **Monitoring Results**

### 4.1 Groundwater Elevations and Flow Directions

Depth to groundwater field measurements obtained prior to the quarterly groundwater sampling event were used to calculate groundwater elevations for each monitoring well. The groundwater elevations are presented in **Table 3**. **Figure 3** presents a Groundwater Contour Map that was constructed for the shallow aquifer utilizing data collected from the monitoring wells MW-1 through MW-17 on August 8 and 9, 2018. The more recently installed monitoring wells MW-16 and MW-17 had not equilibrated fully to static water level at that time; therefore, their groundwater elevations were not used to prepare **Figure 3**.

As depicted in **Figure 3**, the groundwater elevations indicate a localized high in the vicinity of the former dispenser island, near monitoring well MW-1, with radial flow outward. The groundwater elevations observed in monitoring wells MW-1 through MW-5 indicate that the fill material in the vicinity of the dispenser islands, which has a lower permeability than the surrounding native material, is likely causing a mounding effect. Basically, the higher permeable fill material is holding surface water infiltration and groundwater within the less conductive native materials causing perched groundwater in this area of the Site.

The perched groundwater conditions are likely enhanced by the removal of the former UST system and associated dispensers. The removal of the dispensers and associated concrete islands allow the precipitation draining from the canopy to infiltrate into the perched area creating mounding in the area containing fill material.

The gradient is relatively flat to the northeast and east towards MW-7, MW-8 and MW-15 but becomes steeper towards the west-southwest towards monitoring wells MW-9 through MW-14 indicating that the predominant groundwater flow is in this direction.

#### 4.2 Groundwater Analytical Results

The groundwater monitoring event for the Third Quarter 2018 was conducted on August 8 and 9, 2018. This event marks the fourth sampling event performed simultaneously on monitoring wells MW-1 through MW-15 and the second event for MW-16 and MW-17. Monitoring well MW-14 contained an insufficient volume of water to sample at the time of sampling. Also, surface water samples were collected from both Upstream and Downstream locations along the Lower Tributary to Lower Twomile Run.

Each groundwater sample was analyzed for the PADEP post-March 2008 Shortlist of Unleaded Gasoline Parameters (benzene, ethylbenzene, toluene, total xylenes, cumene, MTBE, naphthalene, 1,2,4-TMB and 1,3,5-TMB). The results of the analysis are summarized on **Table 4**, and the associated laboratory analytical reports are provided in **Appendix B**. A Groundwater Analytical Map for the Third Quarter 2018 is presented as **Figure 4**.

Benzene was observed at concentrations exceeding the RU SHS MSC of 5 µg/l in the groundwater samples obtained from monitoring wells MW-1 through MW-5 and MW-17 at concentrations ranging from 32.5 µg/l (MW-1) to 12,600 µg/l (MW-3). The benzene concentration observed in off-site well MW-17 indicates that the groundwater contamination has migrated into the area of State Route 257. Benzene concentrations were below the laboratory detection limit in the sample from monitoring well MW-10 for the third consecutive time, following three previous consecutive exceedances of the RU SHS MSC.

Ethylbenzene was observed at concentrations exceeding the RU SHS MSC of 700 µg/l in the groundwater samples obtained from monitoring wells MW-3 (2,990 µg/l) and MW-5 (2,350 µg/l). Detectable concentrations of ethylbenzene were observed in MW-1 (132 µg/l), MW-2 (369 µg/l), MW-4 (445 µg/l), and MW-17 (601 µg/l).

Toluene and total xylenes were observed at concentrations exceeding their RU SHS MSCs of 1,000 µg/l and 10,000 µg/l, respectively, in the groundwater sample obtained from monitoring well MW-3 (2,800 µg/l and 16,000 µg/l, respectively). Detectable concentrations of toluene were observed in the samples from MW-2, MW-4, and MW-5, at concentrations below their respective

RU SHS MSCs. Total xylene concentrations were observed in the samples from MW-1 and MW-17 at concentrations below their respective RU SHS MSCs.

MTBE was observed at concentrations exceeding the RU SHS MSC of 20 µg/l in the groundwater samples obtained from monitoring wells MW-3 (<25 µg/l [elevated laboratory method detection limit]), MW-5 (54.1 µg/l), MW-8 (226 µg/l) and MW-17 (33.1 µg/l). Detectable concentrations of MTBE were observed in MW-2 (15.7 µg/l), MW-10 (16.3 µg/l), and MW-11 (15.7 µg/l).

Naphthalene was observed at concentrations exceeding the RU SHS MSC of 100 µg/l in the groundwater samples obtained from monitoring wells MW-3 (580 µg/l), MW-4 (146 µg/l), MW-5 (1,100 µg/l), and MW-17 (130 µg/l). Detectable concentrations of naphthalene were observed in MW-1 (19.8 µg/l) and MW-2 (72.6 µg/l).

1,2,4-TMB was observed at concentrations exceeding the RU SHS MSC of 15 µg/l in the groundwater samples obtained from monitoring wells MW-1 through MW-5 and MW-17 at concentrations ranging from 91.4 µg/l (MW-1) to 2,510 µg/l (MW-3). The 1,2,4-TMB concentration observed in off-site well MW-17 (714 µg/l) indicates that the groundwater contamination has migrated into the area of State Route 257. The concentrations of 1,2,4-TMB was below the laboratory method detection limit in all the other monitoring wells.

1,3,5-TMB was observed at concentrations exceeding the RU SHS MSC of 420 µg/l in the groundwater samples obtained from monitoring wells MW-3 (712 µg/l) and MW-5 (660 µg/l). Detectable concentrations of 1,3,5-TMB were observed in MW-1 (13.7 µg/l), MW-2 (96.2 µg/l), MW-4 (24.4 µg/l), MW-16 (2.2 µg/l), and MW-17 (204 µg/l).

The samples from monitoring wells MW-6, MW-7, MW-9, MW-10, MW-11, MW-12, MW-13, MW-15, MW-16 and the two surface water stream samples (Upstream and Downstream) showed no parameters that exceeded their respective RU SHS MSCs.

Monitoring wells MW-1 through MW-5 continue to exhibit the highest concentrations exceeding their respective RU SHS MSC. The impacts in MW-1 through MW-5 are expected since these monitoring wells have shown the presence of LPH historically.

The observed concentrations of benzene, ethylbenzene, toluene, total xylenes and 1,2,4-TMB in MW-3 during the Second Quarter 2018 reached historic highs, likely as a result of the decreased LPH recovery efforts. The benzene, MTBE, naphthalene, and 1,2,4-TMB concentrations observed in MW-17 indicates that the contamination in the groundwater has migrated into the area of State Route 257.

Once the soil excavation remediation activities proposed in the RAP have been conducted, the concentrations of the contaminants of concern in the soil and groundwater in the vicinity of the dispenser island should be drastically reduced. Once the soil excavation remediation has

occurred and the destroyed wells have been replaced, concentration trend graphs will be assembled.

Monitoring wells MW-6, MW-7, MW-9, MW-10, MW-11, MW-12, MW-13, MW-15, and MW-16 currently have no parameters exceeding their respective RU SHS MSCs. As long as the concentrations in these wells remains below their respective RU SHS MSCs, they will demonstrate attainment once a sufficient number of sampling events have occurred.

Monitoring wells MW-18 and MW-19 were sampled on September 27, 2018. Monitoring well MW-18 indicated the presence of 1,2,4-TMB at a concentration of 366 µg/l, which exceeds its RU SHS MSC. None of the other parameters analyzed exceeded their respective RU SHS MSCs.

None of the parameters analyzed in MW-19 were detected above their laboratory method detection limits. The analytical results from the September 27, 2018 sampling event are included in **Table 4**. A copy of the laboratory analytical report for groundwater samples collected from monitoring wells MW-18 and MW-19 is included in **Appendix B**.

## **5.0 Summary**

Product recovery efforts continue to collect LPH from monitoring wells MW-1 through MW-5. A product recovery events occurred on August 8, 2018. Approximately 9.74 gallons of LPH have been recovered through the Third Quarter 2018.

The Right-of-Entry Permit obtained from PennDOT on March 6, 2018 to conduct the soil sampling and monitoring well installation in the shoulder and center turning lane of State Route 257 was modified by Cribbs & Associates to include the installation of soil boring SB-36 and monitoring well MW-18 in the center turning lane, north of monitoring well MW-17.

Two soil borings (SB-36 and SB-37) were advanced and converted into monitoring wells MW-18 and MW-19, respectively, during the Third Quarter 2018. The soil sample from SB-18 (4.0' -5.0') was below the laboratory method detection limit for all parameters analyzed, confirming that the benzene impacts observed in SB-31 do not extend north of SB-35.

In general, the groundwater analytical data obtained during the Third Quarter 2018 monitoring event is consistent with the historical groundwater data. The analytical results for the sampled wells have indicated that only seven of the 17 monitoring wells, and two stream samples, has had concentrations of one or more parameters that exceeded their respective RU SHS MSCs.

The greatest impacts to the groundwater were typically observed in monitoring wells MW-1 through MW-5. The observed concentrations of benzene, ethylbenzene, toluene, total xylenes and 1,2,4-TMB in MW-3 reached historic highs during the second quarter of 2018. But decreased by roughly 50 percent during the Third Quarter 2018 indicating that it might be due to seasonal groundwater fluctuation.

The presence of benzene, MTBE, naphthalene, and 1,2,4-TMB in the groundwater sample from MW-17 at concentrations exceeding their respective RU SHS MSCs confirmed the presence of groundwater impact beneath the roadway. All the other monitoring wells and the two stream samples indicated no exceedances of their respective RU SHS MSCs.

Groundwater results from monitoring wells MW-18 and MW-19, installed in September 2018, indicate that 1,2,4-TMB is present at concentrations exceeding its RU SHS MSC in the center turning lane (MW-18), but that no impacts have migrated to the west side of State Route 257 (MW-19).

Following the discovery of elevated 1,2,4-TMB concentrations in MW-18, Cribbs & Associates is currently evaluating the need for an additional monitoring well farther north in the turning lane to complete the delineation of groundwater impacts to the north. The installation of an additional monitoring well will require modification to the PennDOT permit.

The proposed soil excavation activities will not occur during the fourth quarter since USTIF has mandated that the site, and associated soil remediation activities be put out to for competitive, fixed price bid.

Cribbs & Associates will continue to conduct quarterly groundwater monitoring events until directed to cease by USTIF, pending results of the bid process. Remedial Action Progress Reports (RAPRs) detailing the findings of the quarterly groundwater sampling events will be submitted to PADEP by the 30<sup>th</sup> of the month following the month ending the quarter of sampling.

The next sampling event will be conducted between October 1 and December 31, 2018 (Fourth Quarter 2018).



Remedial Action Progress Report  
Third Quarter 2018  
Seneca Mini Mart, 3390 State Route 257  
Seneca, Venango County, Pennsylvania  
PADEP Facility I.D #61-18854

**TABLES**

**Table 1**  
**Product Recovery**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
MW-1	3/7/2017	2	Sheen	Sheen	NA	Y	0.5	0.0	0
MW-1	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-1	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-1	4/25/2017	2	0.00	0.00	NA	Y	0.0	0.0	1
MW-1	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-1	5/19/2017	2	Sheen	Sheen	NA	Y	0.5	0.0	1
MW-1	6/7/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-1	6/13/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.0	0.0	0
MW-1	7/5/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-1	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	7/31/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	9/7/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	9/22/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-1	10/30/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-1	12/14/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	1/10/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	2/8/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-1	2/22/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-1	3/8/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-1	4/11/2018	2	0.00	0.00	NA	N	0.0	0.0	1
MW-1	6/22/2018	2	0.00	0.00	NA	N	1.0	0.0	0
MW-1	8/9/2018	2	0.00	0.00	NA	N	1.0	0.0	0
MW-1									
MW-2	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-2	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-2	3/7/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-2	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-2	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-2	4/25/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-2	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-2	5/19/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-2	6/7/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-2	6/13/2017	2	Mod. Sheen	Mod. Sheen	NA	Y	1.0	0.0	0
MW-2	7/5/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-2	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	7/31/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	9/7/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-2	9/22/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	10/30/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	12/14/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	0
MW-2	1/10/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	2/8/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	2/22/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-2	3/8/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	4/11/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-2	6/22/2018	2	0.00	0.00	NA	N	1.0	0.0	1
MW-2	8/9/2018	2	0.00	0.00	NA	N	1.0	0.0	0
MW-2									

**Table 1**  
**Product Recovery**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
MW-3	10/4/2016	2	9.84	0.82	0.5933	Y	1.0	0.5	1
MW-3	11/3/2016	2	NM	NM	NM	N	0.0	0.0	1
MW-3	11/10/2016	2	3.60	0.3	0.2171	Y	1.5	0.5	1
MW-3	11/15/2016	2	1.20	0.1	0.0724	Y	2.5	0.1	1
MW-3	11/22/2016	2	0.25	0.021	0.0152	Y	2.0	0.015	1
MW-3	11/30/2016	2	0.25	0.021	0.0152	Y	3.0	0.015	0
MW-3	12/6/2016	2	0.0625	0.0052	0.0038	Y	1.5	0.003	1
MW-3	12/14/2016	2	0.0312	0.0026	0.0019	Y	2.0	0.002	1
MW-3	1/4/2017	2	0.5000	0.0416	0.0301	Y	3.0	0.03	1
MW-3	1/17/2017	2	0.1250	0.0104	0.0075	Y	3.0	0.007	1
MW-3	2/1/2017	2	0.1250	0.0104	0.0075	Y	2.5	0.007	1
MW-3	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	3/7/2017	2	0.1875	0.0156	0.0113	Y	4.0	0.01	1
MW-3	3/21/2017	2	0.0312	0.0026	0.0019	Y	1.5	0.002	1
MW-3	3/29/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-3	4/25/2017	2	Sheen	Sheen	NA	Y	3.0	0.0	1
MW-3	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-3	5/19/2017	2	Heavy Sheen	Heavy Sheen	NA	N	3.0	0.0	1
MW-3	6/7/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	6/13/2017	2	Heavy Sheen	Heavy Sheen	NA	Y	1.0	0.0	0
MW-3	7/5/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	7/17/2017	2	Heavy Sheen	Heavy Sheen	NA	Y	3.0	0.0	1
MW-3	7/31/2017	2	0.36	0.03	0.0217	Y	1.5	0.022	1
MW-3	8/10/2017	2	0.72	0.06	0.0434	Y	1.5	0.04	1
MW-3	9/7/2017	2	0.0312	0.0026	0.0019	Y	1.5	0.002	1
MW-3	9/22/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	10/30/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-3	12/14/2017	2	0.12	0.01	0.0072	N	0.25	0.007	1
MW-3	1/10/2018	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	0
MW-3	2/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	2/22/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-3	3/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.5	0.0	1
MW-3	4/11/2018	2	0.48	0.04	NA	N	0.0	0.0	1
MW-3	6/22/2018	2	Slight Sheen	Slight Sheen	NA	N	1.0	0.0	1
MW-3	8/9/2018	2	Mod. Sheen	Mod. Sheen	NA	N	1.0	0.0	1
MW-3									

**Table 1**  
**Product Recovery**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
MW-4	2/9/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-4	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-4	3/7/2017	2	0.1875	0.0156	0.0113	Y	2.0	0.01	1
MW-4	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-4	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-4	4/25/2017	2	0.00	0.00	NA	N	0.0	0.0	1
MW-4	5/3/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-4	5/19/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.0	0.0	1
MW-4	6/7/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-4	6/13/2017	2	Mod. Sheen	Mod. Sheen	NA	Y	1.0	0.0	0
MW-4	7/5/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-4	7/17/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-4	7/31/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-4	8/10/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	0
MW-4	9/7/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	0
MW-4	9/22/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-4	10/30/2017	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-4	12/14/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-4	1/10/2018	2	Mod. Sheen	Mod. Sheen	NA	N	0.0	0.0	1
MW-4	2/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-4	2/22/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	0
MW-4	3/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.0	0.0	1
MW-4	4/11/2018	2	Slight Sheen	Slight Sheen	NA	N	0.0	0.0	1
MW-4	6/22/2018	2	Mod. Sheen	Mod. Sheen	NA	N	1.0	0.0	1
MW-4	8/9/2018	2	0.00	0.00	NA	N	1.0	0.0	0
MW-4									
MW-4									
MW-5	2/22/2017	2	Sheen	Sheen	NA	N	0.0	0.0	0
MW-5	3/7/2017	2	Sheen	Sheen	NA	Y	1.0	0.0	1
MW-5	3/21/2017	2	Sheen	Sheen	NA	N	0.0	0.0	1
MW-5	3/29/2017	2	0.00	0.00	NA	Y	1.0	0.0	1
MW-5	4/25/2017	2	0.00	0.00	NA	Y	0.0	0.0	0
MW-5	5/3/2017	2	0.00	0.00	NA	N	0.0	0.0	0
MW-5	5/19/2017	2	Sheen	Sheen	NA	Y	0.75	0.0	1
MW-5	6/7/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	6/13/2017	2	Slight Sheen	Slight Sheen	NA	Y	1.00	0.0	0
MW-5	7/5/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	7/17/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	1
MW-5	7/31/2017	2	Heavy Sheen	Heavy Sheen	NA	N	0.00	0.0	0
MW-5	8/10/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.00	0.0	1
MW-5	9/7/2017	2	Mod. Sheen	Mod. Sheen	NA	N	0.00	0.0	1
MW-5	9/22/2017	2	0.00	0.00	NA	N	0.00	0.0	1
MW-5	10/30/2017	2	0.00	0.00	NA	N	0.00	0.0	1
MW-5	12/14/2017	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	0
MW-5	1/10/2018	2	Slight Sheen	Slight Sheen	NA	N	0.00	0.0	0
MW-5	2/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.00	0.0	1
MW-5	2/22/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.00	0.0	0
MW-5	3/8/2018	2	Heavy Sheen	Heavy Sheen	NA	N	0.00	0.0	1
MW-5	4/11/2018	2	0.00	0.00	NA	N	0.00	0.0	1
MW-5	6/22/2018	2	Heavy Sheen	Heavy Sheen	NA	N	1.00	0.0	1
MW-5	8/9/2018	2	0.00	0.00	NA	N	1.00	0.0	0
MW-5									
MW-5									
Cumulative Recovery (gallons) bailed plus socks							58.5	9.7417	66

**Table 1**  
**Product Recovery**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Well Diameter (inches)	Measured Product Thickness		Estimated LPH Volume in well and sandpack	Bailed (Yes/No)	Bailed LPH Volume Product / Water	Bailed LPH Volume Product Recovered	Adsorbent Socks Used (1= new 0= not changed)
			(inches)	(feet)	(gallons)		(gallons)	(gallons)	
Other Wells Checked for Product			Date		Observations				
MW-2, & MW-4			11/3/2016-1/4/2017		No Sheen Reported				
MW-1, MW-2, MW-4 & MW- 5			1/17/2017		Slight Sheen				
MW-2 & MW-4			2/1/2017		Slight Sheen				
MW-2 & MW-4			2/9/2017		Slight Sheen / Socks Installed				
MW-5			2/22/2017		Slight Sheen / Sock Installed				
MW-5			3/7/2017		Slight Sheen / Sock Installed				
MW-1, MW-2, MW-3, MW-4, and MW-5			3/21/2017		Product in MW-3, moderate sheen in MW-2 & MW-4, slight sheen in MW-1 & MW-5				
MW-1 through MW-14			3/29/2017		Sampling event, heavy sheen in MW-3.				
MW-1 through MW-5			4/25/2017		Sheen/globules in MW-3.				
MW-1 through MW-5			5/3/2017		Sheen/globules in MW-3.				
MW-1 through MW-5			5/19/2017		Slight sheen in MW-1, MW-2, MW-4 and MW-5, heavy sheen in MW-3.				
MW-1 through MW-5			6/7/2017		Strong odor in MW-1, and MW-3, mild odor in MW-4 and slight odor MW-2 and MW-5.				
MW-1 through MW-15			6/13/2017		Sampling event, slight sheen in MW-1 and MW-5, moderate sheen in MW-2 and MW-4, heavy sheen in MW-3.				
MW-1 through MW-5			7/5/2017		Strong odor in MW-1, and MW-2, moderate odor in MW-3, MW-4, and MW-5.				
MW-1 through MW-5			7/17/2017		Strong odor in MW-3, and MW-4, moderate odor in MW-4 and slight odor MW-1 and MW-5.				
MW-1 through MW-5			7/31/2017		Measurable product and very strong odor in MW-3. Sheen only in other MWs. Strong odor in MW-4, and MW-5, moderate odor in MW-2 and slight odor MW-1.				
MW-1 through MW-5			8/10/2017		Measurable product and strong odor in MW-3. Sheen only in other MWs. Moderate odor in MW-4, and MW-5, slight odor in MW-1 and MW-2.				
MW-1 through MW-5			9/7/2017		globbulea and very strong odor in MW-3. Sheen only in other MWs. Very strong odor in MW-4, moderate odor in MW-5, slight odor in MW-1 and MW-2.				
MW-1 through MW-5			9/22/2017		Sheen of product and strong odor in MW-3. Slight sheen only in MW-2 and MW-4. No sheen in MW-1 and MW-5 Slight odor in MW-4, no odor in MW-1, MW-2 and MW-5.				
MW-1 through MW-5			10/30/2017		Sheen of product and strong odor in MW-3. Slight sheen only in MW-2 and MW-4. No sheen in MW-1 and MW-5 No odor in MW-1, MW-2, MW-4, and MW-5.				
MW-1 through MW-5			12/14/2017		Measurable product and very strong odor in MW-3. Slight sheen and moderate odor in MW-1, and MW-5. Moderate sheen and strong odor in MW-2. Heavy sheen and very strong odor in MW-4.				
MW-1 through MW-5			1/10/2018		Slight sheen and slight odor in MW-1. Slight sheen and moderate odor in MW-2, and MW-5. Moderate sheen and very strong odor in MW-3 and MW-4.				
MW-1 through MW-5			2/8/2018		Slight sheen and slight odor in MW-1 and MW-2. Heavy sheen in MW-4, and MW-5. Globbules in MW-3. Strong odor in MW-5 and very strong odor in MW-3 and MW-4.				
MW-1 through MW-5			2/22/2018		Slight sheen and slight odor in MW-1 and MW-2. Heavy sheen in MW-4, and MW-5. Globbules in MW-3. Very strong odor in MW-3, MW-4, and MW-5.				
MW-1 through MW-5			3/8/2018		Slight sheen and slight odor in MW-1 and MW-2. Heavy sheen in MW-4, and MW-5. Globbules in MW-3. Very strong odor in MW-3, MW-4, and MW-5.				
MW-1 through MW-5			4/11/2018		No sheen or odor in MW-1 and MW-5. Slight sheen , no odor MW-2. Slight sheen and odor MW-4. Product and strong odor in MW-3.				
MW-1 through MW-5			6/22/2018		No sheen or odor in MW-1. No sheen, slight odor in MW-2. Trace globbules and strong odor in MW-3. Moderate sheen and odor in MW-4. Heavy sheen and strong odor in MW-5.				
MW-1 through MW-5			8/9/2018		No sheen, slight odor in MW-1, MW-2, MW-4, and MW-5. Trace globbules and strong odor in MW-3.				

Each adsorbent sock recovers approximately one pint if fully saturated.  
 NM = not measured

**Table 2**  
**Soil Analytical Results - PA Short List - Unleaded Gasoline**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-1 (8.0'-10.0')	SB-2 (2.0'-4.0')	SB-3 (2.0'-4.0')	SB-3 (6.0'-8.0')	SB-4 (4.0'-6.0')	SB-4 (6.0'-8.0')	SB-5 (2.0'-4.0')	SB-6 (2.0'-4.0')	SB-7 (3.0'-4.0')
Date Sampled								4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/27/2016	4/29/2016	4/29/2016	6/14/2016
<b>VOCs</b>																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<5.9	<241	<2,430	<4.1	<255	<4.3	553	<4.1	<206
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<5.9	<241	316,000	11.6	<255	<4.3	135,000	<4.1	4,060
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<5.9	333	27,700	<4.1	<255	<4.3	15,800	<4.1	487
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<5.9	<241	<2,430	<4.1	<255	<4.3	<291	<4.1	<206
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<5.9	<241	164,900	<4.1	<255	<4.3	33,100	<4.1	1,100
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<5.9	<241	<2,430	<4.1	<255	<4.3	<291	<4.1	<206
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<5.9	<241	567,000	7.6	<255	<4.3	3,000	<4.1	<206
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<5.9	<241	194,000	<4.1	<255	<4.3	1,610	<4.1	<206
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<17.8	<724	1,110,000	27.2	<766	<12.8	<873	<12.2	<617
PID								4.8	30.8	>8000	19.4	121	12.3	443	22.5	230

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-7 (7.0'-8.0')	SB-8 (4.0'-5.0')	SB-9 (3.0'-4.0')	SB-10 (4.0'-5.0')	SB-11 (3.0'-4.0')	SB-11 (7.0'-8.0')	SB-12 (3.0'-4.0')	SB-13 (3.0'-4.0')	SB-14 (3.0'-4.0')
Date Sampled								6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016
<b>VOCs</b>																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<4.8	1,940	2,370	2,390	35,300	<6.1	76,700	36,300	52,500
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<4.8	91,200	60,300	5,750	103,000	<6.1	14,700	178,000	57,000
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<4.8	8,880	10,600	634	9,410	<6.1	844	14,700	4,600
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<4.8	<317	<239	10.0	<2,070	<6.1	<277	<2,280	<250
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<4.8	23,200	19,300	1,360	24,400	<6.1	1,870	41,900	16,800
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<4.8	<317	<239	9.8	115,000	<6.1	1,900	6,110	1,490
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<4.8	207,000	49,800	11,500	190,000	<6.1	8,790	266,000	98,300
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<4.8	63,800	640	134	89,800	<6.1	1,970	128,000	31,200
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<14.4	88,100	2,460	2,690	434,000	<18.3	16,600	523,000	87,100
PID								18.0	3,360	3,140	58.6	1,811	4.1	2,274	1,521	349

**Table 2**  
**Soil Analytical Results - PA Short List - Unleaded Gasoline**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-15 (3.0'-4.0')	SB-16 * (3.0'-4.0')	SB-16 * (7.0'-8.0')	SB-17 (3.0'-4.0')	SB-18 (6.0'-8.0')	SB-19 (0.0'-2.0')	SB-22 (6.0'-8.0')	SB-24 (6.0'-8.0')	MW-7 (2.5'-4.5')
Date Sampled								6/14/2016	6/14/2016	6/14/2016	6/14/2016	9/14/2016	9/14/2016	9/14/2016	9/14/2016	10/17/2016
<b>VOCs</b>																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	101,000	29,300	12.7	50,600	1,170	27.9	963	214	5.2
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	397,000	87,100	28.1	113,000	22,300	<4.3	18,500	8,110	<5.1
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	32,700	7,150	<4.9	12,600	2,840	49.7	1,470	817	<5.1
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<25,100	<181	11.7	<227	<223	<4.3	<198	<195	<5.1
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	119,000	22,600	<4.9	30,200	5,850	10.5	2,920	1,970	<5.1
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	327,000	4,460	<4.9	2,640	<223	<4.3	<198	<195	<5.1
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	895,000	176,000	47.1	191,000	42,900	9.3	40,000	17,500	<5.1
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	291,000	62,400	17.6	77,900	7,810	<4.3	14,600	5,490	<5.1
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	2,030,000	319,000	112	297,000	5,080	18.1	37,000	9,470	<15.3
<b>PH</b>								3,970	3,460	13.8	2,875	952	139	396	824	2.4

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	MW-9 (0.5'-2.5')	MW-8 / SS-5 (10.0'-12.0')	MW-8 / SS-7 (14.0'-16.0')	MW-6 (4.0'-6.0')	MW-6 (8.0'-10.0')	MW-10 (6.0'-8.0')	MW-10 (8.0'-10.0')	MW-11 (4.0'-6.0')	MW-11 (6.0'-8.0')
Date Sampled								10/18/2016	11/1/2016	11/1/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016
<b>VOCs</b>																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<5.0	10.9	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<5.0	<4.6	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<5.0	<4.6	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<5.0	166	7.2	<5.4	<4.4	<4.8	<230	<5.4	<4.3
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<5.0	<4.6	<3.6	5.5	<4.4	<4.8	<230	<5.4	<4.3
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<5.0	<4.6	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<5.0	<4.6	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<5.0	<4.6	<3.6	<5.4	<4.4	<4.8	<230	<5.4	<4.3
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<14.9	<13.9	<10.9	<16.1	<13.3	<14.3	<691	<16.3	<12.8
<b>PH</b>								9.0	3.7	2.3	1.7	0.0	2.7	0.0	0.0	0.0

**Table 2**  
**Soil Analytical Results - PA Short List - Unleaded Gasoline**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango County, Pennsylvania**  
**PADEP Facility ID # 61-18854**

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	MW-12 (4.0'-6.0')	MW-13 (1.0'-2.0')	MW-14 (1.0'-2.0')	SB-32/MW-16 (5.0'-6.0')	SB-27 (2.0'-4.0')	SB-28 (2.0'-3.0')	SB-29 (3.0'-4.0')	SB-30 (4.0'-5.0')	SB-31 (2.0'-3.0')
Date Sampled							Value	1/24/2017	1/24/2017	1/25/2017	4/19/2018	4/24/2018	4/24/2018	6/6/2018	4/24/2018	4/24/2018
<b>VOCs</b>																
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	<5.9	<5.7	<10.7	5.3	29.0	36.2	1,930	78.2	<4.0
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	<5.9	<5.7	<10.7	<4.1	<4.2	6.4	1,090	35.2	<4.0
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	<194	<3.9	<4.0
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	<194	4.0	<4.0
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	<194	<3.9	<4.0
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	<194	5.0	<4.0
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	41.2	7.6	<4.0
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<5.9	<5.7	<10.7	<4.1	<4.2	<4.2	<194	5.0	<4.0
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	<17.6	<17.1	<32.1	<12.3	<12.5	20.7	3,980	29.3	<11.9
<b>PID</b>								8.7	1.0	<1.0	275.0	7.4	25.3	148.5	85.7	28.4

Parameter	UNITS	Residential Soil to Groundwater	Non-Residential Soil to Groundwater	Residential Direct Contact 0-15'	Non-Residential Surface Soil 0-2'	Non-Residential Surface Soil 2-15'	Non-Residential Vapor Intrusion Screening Value	SB-31 (8.0'-10.0')	SB-33 (3.0'-4.0')	SB-34 (2.0'-3.0')	SB-34 (4.0'-5.0')	SB-35 (2.0'-4.0')	SB-35 (6.0'-8.0')	SB-36 (5.0'-6.0')
Date Sampled							Value	4/24/2018	4/24/2018	4/24/2018	4/24/2018	6/6/2018	6/6/2018	9/13/2018
<b>VOCs</b>														
Benzene	ug/kg	500	500	57,000	290,000	330,000	130	7.69	<3.4	9.2	44.7	<4.1	160	<4.2
Ethylbenzene	ug/kg	70,000	70,000	180,000	890,000	1,000,000	46,000	366	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
Isopropylbenzene (Cumene)	ug/kg	600,000	2,500,000	7,700,000	10,000,000	10,000,000	2,500,000	<192	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
Methyl tert-Butyl Ether (MTBE)	ug/kg	2,000	2,000	1,700,000	8,600,000	9,900,000	1,400	<192	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
Naphthalene	ug/kg	25,000	25,000	160,000	760,000	190,000,000	25,000	<192	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
Toluene	ug/kg	100,000	100,000	10,000,000	10,000,000	10,000,000	44,000	<192	<3.4	<3.8	7.5	<4.1	8.2	<4.2
1,2,4-Trimethylbenzene	ug/kg	8,400	35,000	130,000	560,000	640,000	35,000	603	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
1,3,5-Trimethylbenzene	ug/kg	74,000	210,000	2,200,000	10,000,000	10,000,000	210,000	<192	<3.4	<3.8	<5.2	<4.1	<4.6	<4.2
Xylene (Total)	ug/kg	1,000,000	1,000,000	1,900,000	8,000,000	9,100,000	990,000	1,630	<10.3	<11.4	<15.5	<12.3	<13.8	<12.6
<b>PID</b>								445.3	6.5	6.3	79.5	1.4	40.7	501.4

**Notes:**

All organic contaminant constituents reported in ug/kg. Lead reported in ng/kg.

NA Denotes Not Analyzed, Not Available, or Not Applicable

**Blue** - Denotes exceedance of Residential Soil to Groundwater Statewide Health Standard.

**Blue & Bold** - Denotes exceedance of Non-Residential Soil to Groundwater Statewide Health Standard.

**Green** - Denotes exceedance of Residential Direct-Contact, 0-15' Statewide Health Standard.

**Red** - Denotes exceedance of Non-Residential Direct-Contact, 0-2' Statewide Health Standard.

**Red & Bold** - Denotes exceedance of Non-Residential Direct-Contact, 2-15' Statewide Health Standard.

**####** - Denotes exceeds two or more Statewide Health Standards.

**Highlighted value exceeds Non-Residential Vapor Intrusion screening value Statewide Health Standard.**

\* Soil samples SB-16 (3.0'-4.0') and SB-16 (7.0'-8.0') labels inadvertently reversed to laboratory, this Table presents corrected data.



**Table 3**  
Historic Groundwater Elevation Data  
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart  
3390 State Route 257  
Seneca Borough, Venango County, Pennsylvania  
PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickness (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-1	7/12/2016	1450.44	8.0	1.72	0.00	1.72	1448.72
MW-1	10/4/2016	1450.44	8.0	1.66	0.00	1.66	1448.78
MW-1	1/17/2017	1450.44	8.0	1.16	0.00	1.16	1449.28
MW-1	3/29/2017	1450.44	8.0	1.53	0.00	1.53	1448.91
MW-1	6/12/2017	1450.44	8.0	1.53	Sheen	1.53	1448.91
MW-1	2/22/2018	1450.44	8.0	0.81	Sheen	0.81	1449.63
MW-1	6/22/2018	1450.44	8.0	1.00	0.00	1.00	1449.44
MW-1	8/8/2018	1450.44	8.0	1.42	0.00	1.42	1449.02
MW-2*	7/12/2016	1449.80	8.0	5.50	0.00	5.50	1444.30
MW-2	10/4/2016	1449.80	8.0	1.57	0.00	1.57	1448.23
MW-2	1/17/2017	1449.80	8.0	0.89	0.00	0.89	1448.91
MW-2	3/29/2017	1449.80	8.0	1.03	0.00	1.03	1448.77
MW-2	6/12/2017	1449.80	8.0	1.07	Sheen	1.07	1448.73
MW-2	2/22/2018	1449.80	8.0	0.79	Sheen	0.79	1449.01
MW-2	6/22/2018	1449.80	8.0	0.77	0.00	0.77	1449.03
MW-2	8/9/2018	1449.80	8.0	1.49	0.00	1.49	1448.31
MW-3*	7/12/2016	1450.14	8.0	5.51	0.00	5.51	1444.63
MW-3	10/4/2016	1450.14	8.0	2.32	0.82	1.72	1448.42
MW-3	1/17/2017	1450.14	8.0	1.02	0.01	1.01	1449.13
MW-3	3/29/2017	1450.14	8.0	0.95	0.01	0.94	1449.20
MW-3	6/12/2017	1450.14	8.0	1.02	Sheen	1.02	1449.12
MW-3	2/22/2018	1450.14	8.0	0.36	Sheen	0.36	1449.78
MW-3	6/22/2018	1450.14	8.0	0.36	Sheen	0.36	1449.78
MW-3	8/9/2018	1450.14	8.0	1.89	Sheen	1.89	1448.25
MW-4	7/12/2016	1449.99	8.0	1.19	0.00	1.19	1448.80
MW-4	10/4/2016	1449.99	8.0	1.89	0.00	1.89	1448.10
MW-4	1/17/2017	1449.99	8.0	0.96	0.00	0.96	1449.03
MW-4	3/29/2017	1449.99	8.0	1.01	0.00	1.01	1448.98
MW-4	6/12/2017	1449.99	8.0	0.98	Sheen	0.98	1449.01
MW-4	2/22/2018	1449.99	8.0	0.28	Sheen	0.28	1449.71
MW-4	6/22/2018	1449.99	8.0	0.45	Sheen	0.45	1449.54
MW-4	8/9/2018	1449.99	8.0	1.09	0.00	1.09	1448.90

**Table 3**  
 Historic Groundwater Elevation Data  
 Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart  
 3390 State Route 257  
 Seneca Borough, Venango County, Pennsylvania  
 PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickless (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-5*	7/12/2016	1449.93	8.0	5.72	0.00	5.72	1444.21
MW-5	10/4/2016	1449.93	8.0	1.03	0.00	1.03	1448.90
MW-5	1/17/2017	1449.93	8.0	1.08	0.00	1.08	1448.85
MW-5	3/29/2017	1449.93	8.0	1.21	0.00	1.21	1448.72
MW-5	6/12/2017	1449.93	8.0	1.14	Sheen	1.14	1448.79
MW-5	2/22/2018	1449.93	8.0	0.83	Sheen	0.83	1449.10
MW-5	6/22/2018	1449.93	8.0	1.04	Sheen	1.04	1448.89
MW-5	8/9/2018	1449.93	8.0	1.37	0.00	1.37	1448.56
MW-6	1/17/2017	1450.52	9.8	3.48	0.00	3.48	1447.04
MW-6	3/28/2017	1450.52	9.8	3.43	0.00	3.43	1447.09
MW-6	6/12/2017	1450.52	9.8	3.45	0.00	3.45	1447.07
MW-6	2/22/2018	1450.52	9.8	3.36	0.00	3.36	1447.16
MW-6	6/22/2018	1450.52	9.8	3.33	0.00	3.33	1447.19
MW-6	8/9/2018	1450.52	9.8	3.83	0.00	3.83	1446.69
MW-7	1/17/2017	1451.98	10.0	3.30	0.00	3.30	1448.68
MW-7	3/29/2017	1451.98	10.0	3.30	0.00	3.30	1448.68
MW-7	6/12/2017	1451.98	10.0	3.45	0.00	3.45	1448.53
MW-7	2/21/2018	1451.98	10.0	3.07	0.00	3.07	1448.91
MW-7	6/22/2018	1451.98	10.0	3.32	0.00	3.32	1448.66
MW-7	8/9/2018	1451.98	10.0	3.71	0.00	3.71	1448.27
MW-8*	12/6/2016	1449.95	16.0	11.60	0.00	11.60	1438.35
MW-8	1/17/2017	1449.95	16.0	3.95	0.00	3.95	1446.00
MW-8	3/28/2017	1449.95	16.0	2.61	0.00	2.61	1447.34
MW-8	4/25/2017	1449.95	16.0	2.42	0.00	2.42	1447.53
MW-8	6/12/2017	1449.95	16.0	2.28	0.00	2.28	1447.67
MW-8	2/22/2018	1449.95	16.0	1.14	0.00	1.14	1448.81
MW-8	6/22/2018	1449.95	16.0	1.70	0.00	1.70	1448.25
MW-8	8/8/2018	1449.95	16.0	2.70	0.00	2.70	1447.25

**Table 3**  
Historic Groundwater Elevation Data  
Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart  
3390 State Route 257  
Seneca Borough, Venango County, Pennsylvania  
PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickless (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-9*	12/6/2016	1448.91	12.5	10.18	0.00	10.18	1438.73
MW-9	1/17/2017	1448.91	12.5	2.51	0.00	2.51	1446.40
MW-9	3/28/2017	1448.91	12.5	3.86	0.00	3.86	1445.05
MW-9	6/12/2017	1448.91	12.5	3.96	0.00	3.96	1444.95
MW-9	2/21/2018	1448.91	12.5	5.31	0.00	5.31	1443.60
MW-9	6/22/2018	1448.91	12.5	3.62	0.00	3.62	1445.29
MW-9	8/8/2018	1448.91	12.5	4.28	0.00	4.28	1444.63
MW-10*	12/6/2016	1448.39	9.9	8.15	0.00	8.15	1440.24
MW-10	1/17/2017	1448.39	9.9	6.72	0.00	6.72	1441.67
MW-10	3/28/2017	1448.39	9.9	4.32	0.00	4.32	1444.07
MW-10	4/25/2017	1448.39	9.9	3.49	0.00	3.49	1444.90
MW-10	6/12/2017	1448.39	9.9	3.53	0.00	3.53	1444.86
MW-10	2/22/2018	1448.39	9.9	5.42	0.00	5.42	1442.97
MW-10	6/22/2018	1448.39	9.9	4.04	0.00	4.04	1444.35
MW-10	8/8/2018	1448.39	9.9	4.96	0.00	4.96	1443.43
MW-11*	12/6/2016	1447.56	9.9	9.90	0.00	DRY	DRY
MW-11*	1/17/2017	1447.56	9.9	9.90	0.00	DRY	DRY
MW-11*	2/22/2017	1447.56	9.9	8.90	0.00	8.90	1438.66
MW-11	3/28/2017	1447.56	9.9	7.65	0.00	7.65	1439.91
MW-11	4/25/2017	1447.56	9.9	7.65	0.00	7.65	1439.91
MW-11	6/12/2017	1447.56	9.9	6.85	0.00	6.85	1440.71
MW-11	2/21/2018	1447.56	9.9	7.01	0.00	7.01	1440.55
MW-11	6/22/2018	1447.56	9.9	6.19	0.00	6.19	1441.37
MW-11	8/8/2018	1447.56	9.9	6.22	0.00	6.22	1441.34
MW-12	2/1/2017	1447.76	8.0	4.01	0.00	4.01	1443.75
MW-12	3/28/2017	1447.76	8.0	4.15	0.00	4.15	1443.61
MW-12	6/12/2017	1447.76	8.0	4.25	0.00	4.25	1443.51
MW-12	2/21/2018	1447.76	8.0	3.99	0.00	3.99	1443.77
MW-12	6/22/2018	1447.76	8.0	4.10	0.00	4.10	1443.66
MW-12	8/9/2018	1447.76	8.0	5.81	0.00	5.81	1441.95

**Table 3**  
 Historic Groundwater Elevation Data  
 Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart  
 3390 State Route 257  
 Seneca Borough, Venango County, Pennsylvania  
 PADEP Facility ID # 61-18854

Monitoring Well	Date	TOC Elevation (feet)	Total Depth of Well (feet)	Depth to Top of Water (feet)	Product Thickness (feet)	Corrected Static Water Level (feet)	Groundwater Elevation (feet)
MW-13	2/1/2017	1447.48	8.0	3.16	0.00	3.16	1444.32
MW-13	3/28/2017	1447.48	8.0	3.78	0.00	3.78	1443.70
MW-13	6/12/2017	1447.48	8.0	4.06	0.00	4.06	1443.42
MW-13	2/21/2018	1447.48	8.0	3.12	0.00	3.12	1444.36
MW-13	6/22/2018	1447.48	8.0	3.75	0.00	3.75	1443.73
MW-13	8/9/2018	1447.48	8.0	5.04	0.00	5.04	1442.44
MW-14	2/1/2017	1448.07	8.0	3.50	0.00	3.50	1444.57
MW-14	3/28/2017	1448.07	8.0	3.83	0.00	3.83	1444.24
MW-14	6/12/2017	1448.07	8.0	5.61	0.00	5.61	1442.46
MW-14	2/21/2018	1448.07	8.0	4.10	0.00	4.10	1443.97
MW-14	6/22/2018	1448.07	8.0	4.35	0.00	4.35	1443.72
MW-14	8/9/2018	1448.07	8.0	DRY	0.00	DRY	<1440
MW-15*	6/12/2017	1451.80	12.5	10.76	0.00	10.76	1441.04
MW-15	7/31/2017	1449.53	12.5	1.67	0.00	1.67	1447.86
MW-15	2/22/2018	1449.53	12.5	1.72	0.00	1.72	1447.81
MW-15	6/22/2018	1449.53	12.5	1.66	0.00	1.66	1447.87
MW-15	8/9/2018	1449.53	12.5	1.90	0.00	1.90	1447.63
MW-16*	6/22/2018	1449.56	10.0	10.00	0.00	DRY	DRY
MW-16*	7/10/2018	1449.56	10.0	9.77	0.00	9.77	1439.79
MW-16*	8/9/2018	1449.56	10.0	9.22	0.00	9.22	1440.34
MW-17*	6/22/2018	1450.10	9.8	8.92	0.00	8.92	1441.18
MW-17*	8/9/2018	1450.10	9.8	8.40	Slight sheen	8.40	1441.70
MW-18*	9/27/2018	1450.00	10.0	7.39	0.00	7.39	1442.61
MW-19	9/27/2018	1447.00	4.2	0.86	0.00	0.86	1446.14

1/17/2017 - MW-6 and MW-7 sampled, all other wells gauged.

4/25/2017 - MW-8 sampled, MW-10 and MW-11 gauged only.

MW-15 PVC cut down by 1.27' between initial sampling event and surveying MW-15.

MW-X \* Groundwater Elevation measured before water level reaches static equilibrium.

Monitoring Wells MW-16 and MW-17 Surveyed by Cribbs & Associates July 10, 2018.

Monitoring Wells MW-18 and MW-19 TOC elevations approximated - not yet surveyed.

**TABLE 4**  
**Historical Groundwater Analytical Results**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango Co., PA**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
SHS MSC Residential		5	700	840	20	100	1,000	15	420	10,000
SHS MSC Non-Residential		5	700	3,500	20	100	1,000	62	1,200	10,000
Non-Residential Vapor Intrusion Screening Values		350	860	24,000	96,000	1,300	430,000	750	1,200	12,000
MW-1	7/12/2016	63.2	321	17.5	<5.0	94.3	<5.0	301	81.5	694
MW-1	10/4/2016	92.1	1,100	53.7	6.2	233	9.8	604	214	1,270
MW-1	3/29/2017	76.2	638	43.2	9.3	179	<5.0	573	219	497
MW-1	6/13/2017	45.9	370	30.1	<5.0	93.6	<5.0	297	69.1	325
MW-1	2/22/2018	36.7	269	19.7	<5.0	49.0	<5.0	200	35.1	296
MW-1	6/22/2018	28.1	169	18.9	<5.0	30.9	<5.0	115	19.5	98.0
MW-1	8/8/2018	32.5	132	21.4	<5.0	19.8	<5.0	91.4	13.7	56.2
MW-2	7/12/2016	664	509	39.5	12.3	170	106	1,100	328	2,210
MW-2	10/4/2016	1,800	752	66.5	21.3	134	83	635	264	740
MW-2	3/29/2017	783	250	18.8	14.8	37.4	<5.0	118	97.7	91.1
MW-2	6/13/2017	884	319	23.6	15.9	46.5	10.5	179	87.3	290
MW-2	2/22/2018	750	345	28.6	13.0	37.0	<5.0	222	87.3	281
MW-2	6/22/2018	1,030	388	30.1	15.8	57.4	5.3	277	80.0	407
MW-2	8/9/2018	968	369	33.3	15.7	72.6	7.4	302	96.2	357
MW-3	7/12/2016	15,000	3,070	85.0	41.7	<500	10,500	2,320	595	15,600
MW-3	10/4/2016	17,800	3,000	88.2	39.7	411	10,200	2,020	557	15,600
MW-3	3/29/2017	13,400	4,410	191	<25	880	8,810	4,920	1,590	23,900
MW-3	6/13/2017	17,000	2,980	73.4	<25	537	7,270	2,730	595	16,800
MW-3	2/22/2018	7,480	1,660	58.8	<25	300	2,390	1,810	526	12,200
MW-3	6/22/2018	26,000	5,650	74.4	<25	439	6,950	5,190	577	30,800
MW-3	8/9/2018	12,600	2,990	90.9	<25	580	2,800	2,510	712	16,000
MW-4	7/12/2016	2,240	1,240	81.3	7.8	291	667	1,200	300	3,070
MW-4	10/4/2016	1,200	485	55.1	<5.0	133	170	313	103	922
MW-4	3/29/2017	1,760	764	71.9	5.1	145	47.0	394	133	1,400
MW-4	6/13/2017	1,600	626	66.5	<5.0	153	25.7	289	86.7	856
MW-4	2/22/2018	2,010	796	72.8	5.0	130	72.3	440	104.0	1,220
MW-4	6/22/2018	1,800	884	88.4	5.0	210	29.7	358	36.3	325
MW-4	8/9/2018	1,520	445	67.4	<5.0	146	18.5	200	24.4	146
MW-5	7/12/2016	3,940	2,140	96.3	51.7	150	85.2	1,570	485	8,130
MW-5	10/4/2016	9,860	2,300	99.2	75.5	384	32.1	1,950	554	6,450
MW-5	3/29/2017	9,180	2,420	100	40.6	386	27.3	2,010	585	3,220
MW-5	6/13/2017	10,500	3,020	109	61.3	4,470	53.9	3,510	1,040	8,660
MW-5	2/22/2018	7,350	1,880	72	41.1	236	<25	1,570	471	5,430
MW-5	6/22/2018	10,100	2,390	102	32.9	470	21.5	2,210	646	5,710
MW-5	8/9/2018	8,080	2,350	97.5	54.1	1,100	15.9	2,290	660	4,770
MW-6	1/17/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	6/13/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	2/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-6	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1.4	<1.0	<5.0
MW-6	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

**TABLE 4**  
**Historical Groundwater Analytical Results**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango Co., PA**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
SHS MSC Residential		5	700	840	20	100	1,000	15	420	10,000
SHS MSC Non-Residential		5	700	3,500	20	100	1,000	62	1,200	10,000
Non-Residential Vapor Intrusion Screening Values		350	860	24,000	96,000	1,300	430,000	750	1,200	12,000
MW-7	1/17/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	6/13/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-7	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	12/6/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	3/28/2017	<5.0	<5.0	<5.0	422	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	4/25/2017	<5.0	<5.0	<5.0	520	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	6/12/2017	<5.0	<5.0	<5.0	421	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	2/22/2018	<5.0	<5.0	<5.0	157	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	6/22/2018	<5.0	<5.0	<5.0	247	<5.0	<5.0	<1.0	<1.0	<5.0
MW-8	8/9/2018	<5.0	<5.0	<5.0	226	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	12/6/2016	<5.0	<5.0	<5.0	10.4	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-9	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-10	12/6/2016	16.3	315	59.4	15.9	99.3	<5.0	260	9.2	8.3
MW-10	3/28/2017	8.9	141	23.1	16.3	31.5	<5.0	22.3	2.6	<5.0
MW-10	6/12/2017	5.3	81.8	14.4	21.3	11.1	<5.0	6.4	1.9	<5.0
MW-10	2/22/2018	<5.0	53.4	17.7	16.4	<5.0	<5.0	1.6	1.6	<5.0
MW-10	6/22/2018	<5.0	8.9	6.4	15.3	<5.0	<5.0	1.0	<1.0	<5.0
MW-10	8/8/2018	<5.0	<5.0	<5.0	16.3	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	12/6/2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-11	2/22/2017	<5.0	<5.0	<5.0	11.6	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	3/28/2017	<5.0	<5.0	<5.0	11.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	6/12/2017	<5.0	<5.0	<5.0	13.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	2/21/2018	<5.0	<5.0	<5.0	12.2	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	6/22/2018	<5.0	<5.0	<5.0	15.8	<5.0	<5.0	<1.0	<1.0	<5.0
MW-11	8/8/2018	<5.0	<5.0	<5.0	15.7	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-12	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-13	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0

**TABLE 4**  
**Historical Groundwater Analytical Results**  
**Harper Oil Company/Heath Oil, Inc. – Seneca Mini Mart**  
**3390 State Route 257**  
**Seneca Borough, Venango Co., PA**  
**PADEP Facility ID # 61-18854**

Monitoring Well	Date	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
SHS MSC Residential		5	700	840	20	100	1,000	15	420	10,000
SHS MSC Non-Residential		5	700	3,500	20	100	1,000	62	1,200	10,000
Non-Residential Vapor Intrusion Screening Values		350	860	24,000	96,000	1,300	430,000	750	1,200	12,000
MW-14	2/1/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	3/28/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-14	8/8/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-15	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	7/31/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-15	8/8/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
MW-16	6/22/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-16	7/10/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2.0	2.1	19.4
MW-16	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	2.2	<5.0
MW-17	6/22/2018	1,070	376	15.5	14.7	69.9	<5.0	591	229	2,000
MW-17	8/8/2018	1,630	601	22.3	33.1	130	<5.0	714	204	2,710
MW-18	9/27/2018	<5.0	50.3	14.7	<5.0	50.2	<5.0	366	51.8	69.0
MW-19	9/27/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	10/4/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	2/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Upstream	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	10/4/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	3/29/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	6/12/2017	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	2/21/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	6/22/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Downstream	8/9/2018	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0
Duplicates										
MW-10	2/22/2018	<5.0	52.4	18.1	16.6	<5.0	<5.0	1.6	1.6	<5.0
MW-5	6/22/2018	9,350	2,230	110	39.3	455	25.7	2,130	617	5,420

All concentrations provided in micrograms per liter(ug/L).

MTBE = Methyl Tert Butyl Ether

TMB = Trimethylbenzene

NA indicates parameter not analyzed.

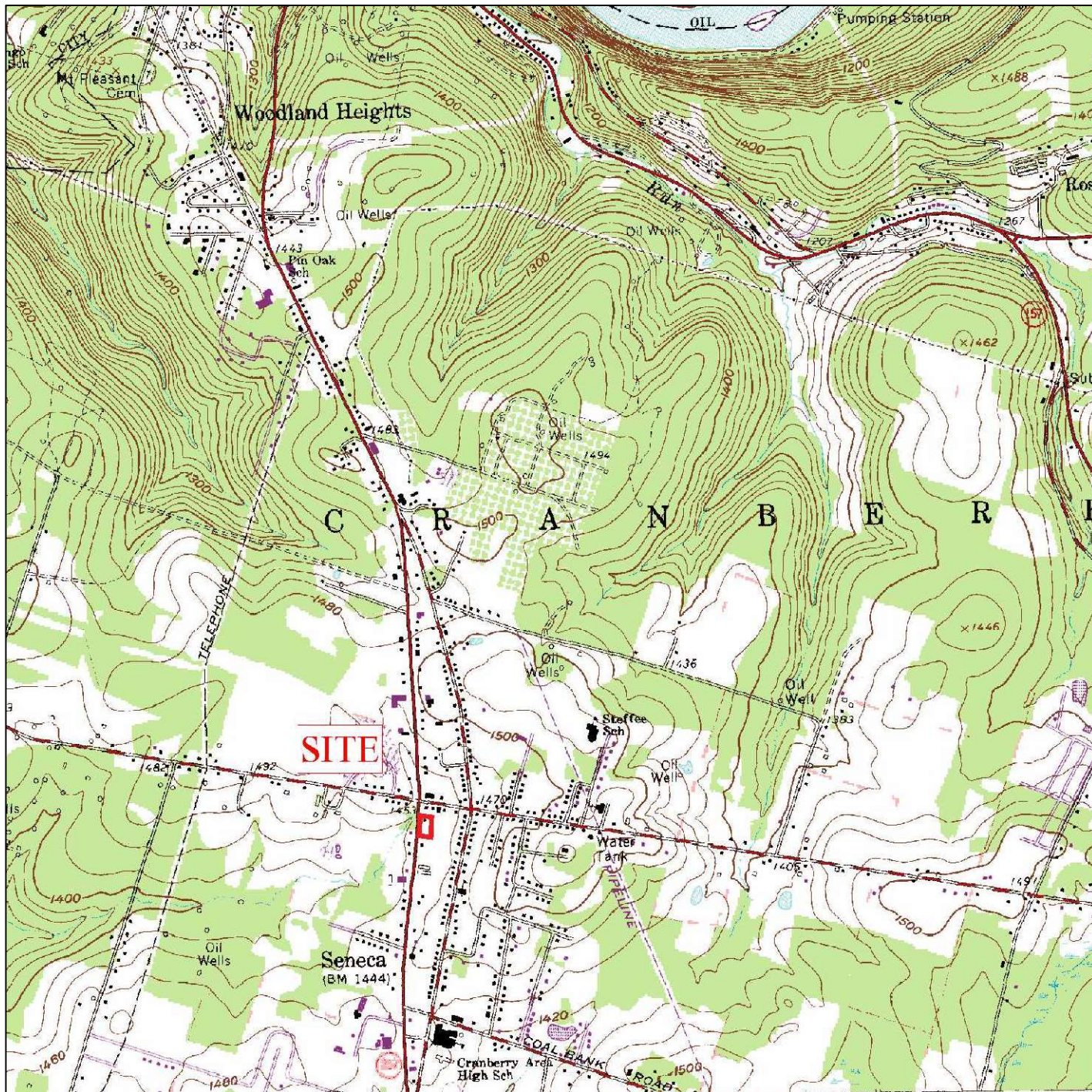
Red values denote exceedences of the Residential Statewide Health Standard.

Red Bolded values denote exceedences of the Non-Residential Statewide Health Standard.

Highlighted value exceeds the Non-Residential Vapor Intrusion Screening Statewide Health Standard.

## **FIGURES**





**FIGURE 1**  
**SITE LOCATION MAP**

**Remedial Action Progress Report**  
Harper Oil Company/Heath Oil Inc., Seneca Mini Mart  
3390 State Route 257  
Seneca Borough, Venango Co., Pennsylvania



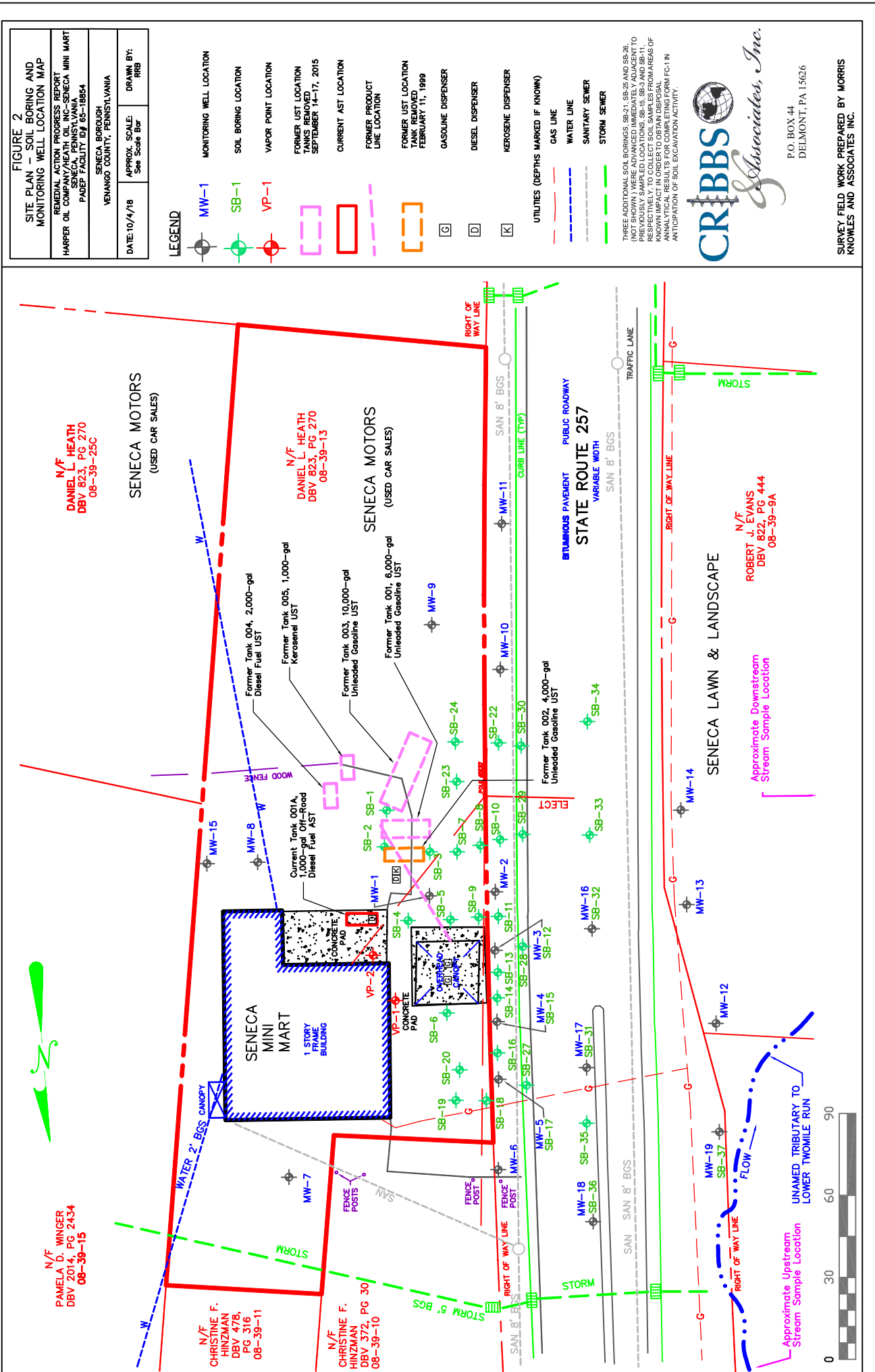
P.O. BOX 44  
DELMONT, PA 15626  
724.454.2310

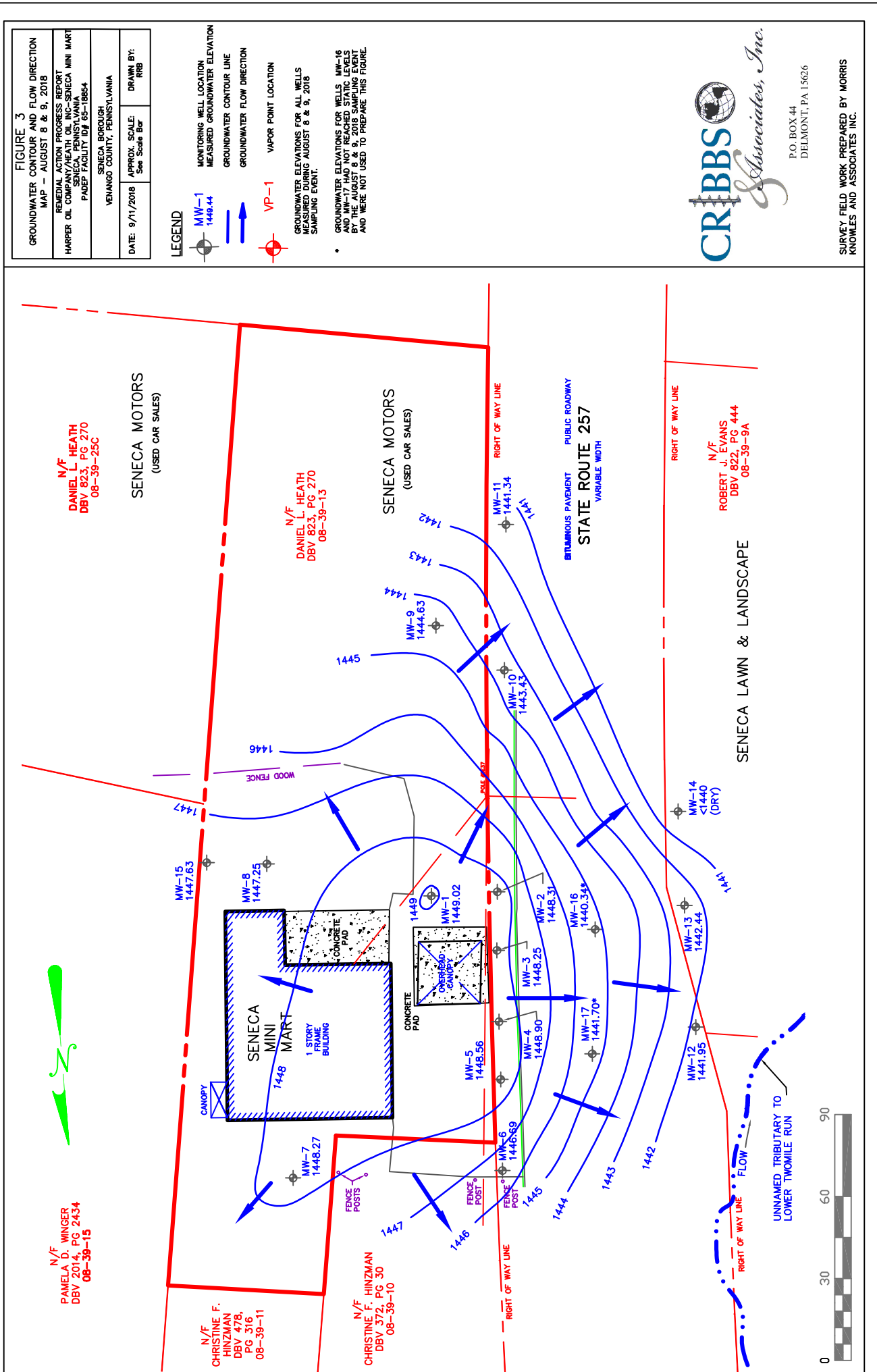
REFERENCE:  
OIL CITY, PENNSYLVANIA  
USGS 7.5-Minute Quadrangle

SCALE:  
1 inch equals 2000 feet









REMEDIAL ACTION PROGRESS REPORT	
HARPER OIL COMPANY/HEATH OIL INC--SENECA MINI MART SENECA, PENNSYLVANIA PADEP FACILITY Dfj 85-18854	
SENECA BOROUGH VENANGO COUNTY, PENNSYLVANIA	
DATE: 10/12/18	APPROX. SCALE: See Scale Bar
DRAWN BY: RRB	

## LEGEND



## MONITORING WELL LOCATION

SHS MSCs	Residential	Non-Residential
Benzene	5	5
Ethylbenzene	700	700
MTBE	20	20
Naphthalene	100	100
Toluene	1,000	1,000
1,2,4-TMB	15	62
1,3,5-TMB	420	1,200
Total Xylene	10,000	10,000

Analytical Results of Monitoring Wells with No Exceedance of the SHS MSCs are not shown

Groundwater samples collected on August 8 and 9, 2018. Monitoring Well MW-14 was DRY on August 9, 2018.

Monitoring Wells MW-18 and MW-19  
Installed on September 13, 2018 and  
Sampled on September 27, 2018.

FORMER UST LOCATION  
TANKS REMOVED  
SEPTEMBER 14-17, 2015

CURRENT AST LOCATION

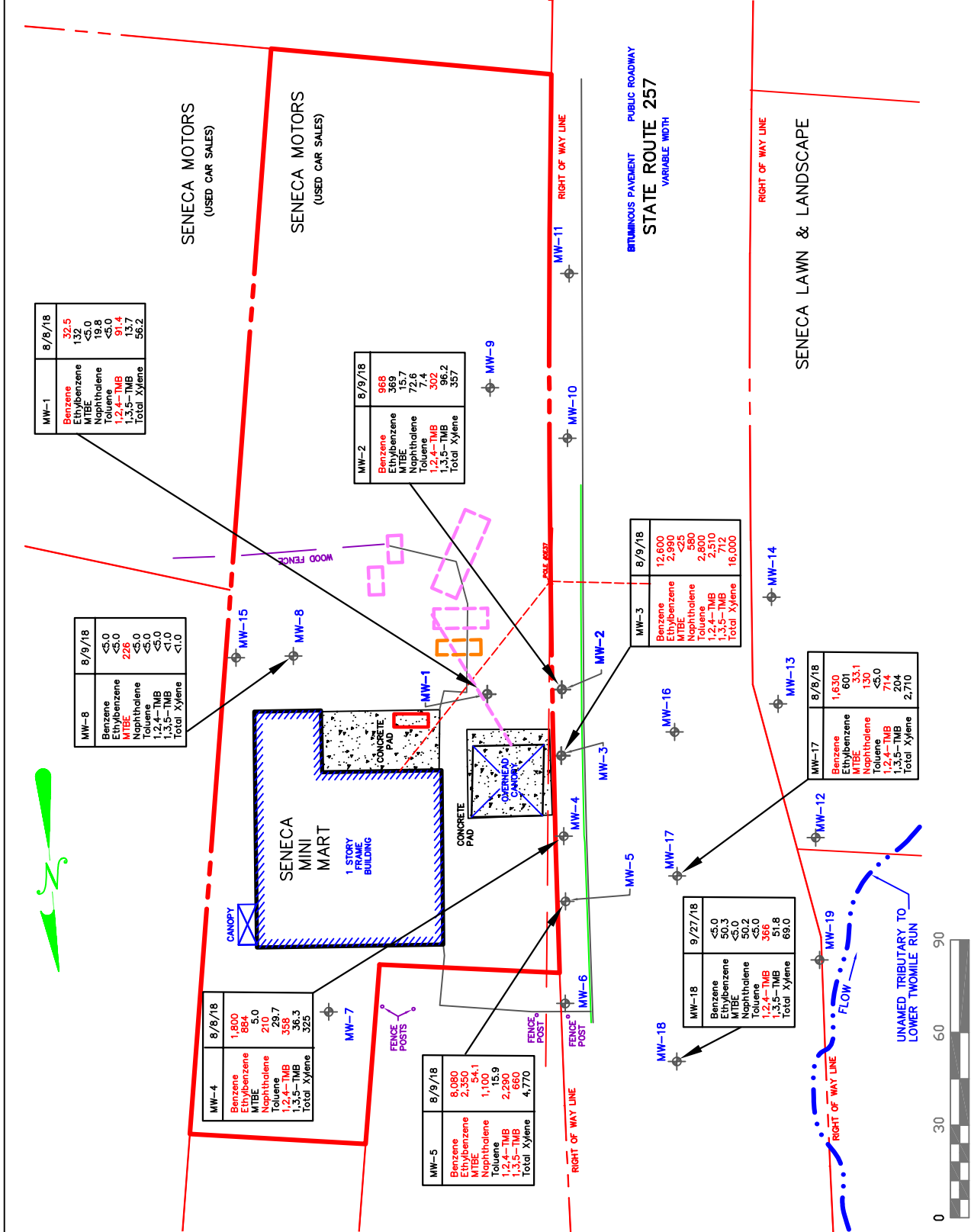
FORMER PRODUCT  
LINE LOCATION

FORMER UST LOCATION  
TANK REMOVED  
FEBRUARY 11, 1999



P.O. BOX 44  
DELMONT, PA 15626

**SURVEY FIELD WORK PREPARED BY MORRIS  
KNOWLES AND ASSOCIATES INC.**



Remedial Action Progress Report  
Third Quarter 2018  
Seneca Mini Mart, 3390 State Route 257  
Seneca, Venango County, Pennsylvania  
PADEP Facility I.D #61-18854

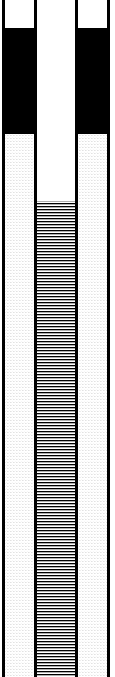
## **APPENDICES**

Remedial Action Progress Report  
Third Quarter 2018  
Seneca Mini Mart, 3390 State Route 257  
Seneca, Venango County, Pennsylvania  
PADEP Facility I.D #61-18854

**APPENDIX A**  
**Soil Boring and Monitoring Well Logs**

CLIENT: Heath Oil PROJECT # DATE DRILLED: 9/13/2018  
 SITE: Seneca Mini Mart LOCATION: Seneca, PA  
 DRILLING COMPANY: Cribbs & Associates RIG B-57 BOREHOLE: 6" Diameter  
 LOGGED BY: Jared Thorn DRILLING METHOD: 2 1/4" HSA WATER LEVEL:  
 SAMPLING PROCEDURE: 2" Split Spoon SAMPLING INTERVAL: Continuous TOTAL DEPTH: 10.0 Feet

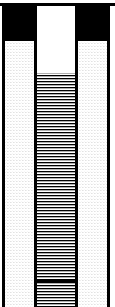
	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.25' - 3.0'	PVC sched. 40	2.75'	2"
SCREEN:	Slotted - 0.01"	3.0' - 10.0'	PVC sched. 40	7.0'	2"
GROUT:	Chips				
SEAL:	1/8" Pellets	0.5' - 2.0'	Bentonite	1.5'	6"
FILTER PACK:	quartz sand	2.5' - 10.0'	Silica	7.5'	6"

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	1	NA	(0.0' - 2.5') 1.3' of <b>Asphalt</b> , with <b>Limestone gravel</b> sub-base.		1	Hand Clear
	2				2	
	3				3	
	4	0.1	(2.5' - 6.0') Brown and dark Gray <b>Silt</b> , traces of clay, fine-grained sand, gravel, and roots, low plasticity, dry. Gravel is jighly weathered, gray, fine grained sandstone, gray shale and coal fragments.	18	4	11"
	5		(4.0' - 6.5') Gray <b>Silt</b> , little clay, moderate plasticity, no odor, damp.	14	5	
	6	NA	Soil Sample SB-36 (5.0'-6.0') collected at 11:50.	11	6	Auger
	7		(6.0' - 8.5') Gray <b>Silty Clay</b> , trace gravel, with yellow brown motteling, moderate to high plasticity, moist. Gravel is gray rounded fine-grained sandstone and gray shale.	12	7	
	8	501.4		7	8	24"
	9		(8.5' - 10.0') Yellow Brown <b>Silt</b> , traces of clay, fine-grained sand and gravel, low plasticity, dry. Gravel is gray, fine-grained, micaceous sandstone, gray and yellow brown shale and dark gray-black carbonaceous shale.	7	9	
	10			10	10	Auger
	11		Bottom of Boring at 10.0'		11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	

CLIENT: Heath Oil  
 SITE: Seneca Mini Mart  
 DRILLING COMPANY: Cribbs & Associates  
 LOGGED BY: Jared Thorn  
 SAMPLING PROCEDURE: Hand Auger

PROJECT # \_\_\_\_\_ DATE DRILLED: 9/13/2018  
 LOCATION: Seneca, PA  
 RIG: Hand Auger BOREHOLE: 6" Diameter  
 DRILLING METHOD: Hand Auger WATER LEVEL: \_\_\_\_\_  
 SAMPLING INTERVAL: Continuous TOTAL DEPTH: 4.2 Feet

	TYPE	INTERVAL	MATERIAL	LENGTH	DIAMETER
CASING:	Solid	0.2' - 1.2'	PVC sched. 40	1.0'	2"
SCREEN:	Slotted - 0.01"	1.2' - 4.2'	PVC sched. 40	3.0'	2"
GROUT:	Chips				
SEAL:	1/8" Pellets	0.2' - 1.0'	Bentonite	0.8'	8"
FILTER PACK:	quartz sand	1.0' - 4.2'	Silica	3.2'	8"

Monitoring Well Construction Details	DEPTH (FT.)	HEADSPACE	DESCRIPTION	BLOWCOUNTS	DEPTH (FT.)	RECOVERY (INCHES)
	0.0		(0.0' - 1.5') Brown <b>Silt</b> , traces of clay, rounded, gravel and roots, low plasticity, damp. Gravel is yellow-brown and gray fine-grained sandstone.		1	Hand Auger
	0.1		(1.5' - 4.0') Dark Gray <b>Silty Clay</b> , traces of gravel and roots, moderate to high plasticity, moist to wet. Gravel is rounded, gray and yellow-brown fine-grained sandstone, and gray shale.		2	
	0.1				3	
	0.0				4	
			(4.0' - 4.2') Gray <b>Silt</b> , little clay, moderate plasticity, no odor, damp.			
			Bottom of Boring at 4.2'			
	5				5	
	6				6	
	7				7	
	8				8	
	9				9	
	10				10	
	11				11	
	12				12	
	13				13	
	14				14	
	15				15	
	16				16	
	17				17	
	18				18	
	19				19	
	20				20	



Remedial Action Progress Report  
Third Quarter 2018  
Seneca Mini Mart, 3390 State Route 257  
Seneca, Venango County, Pennsylvania  
PADEP Facility I.D #61-18854

**APPENDIX B**  
**Laboratory Analytical Reports**

July 20, 2018

Mr. Gary Cribbs  
Cribbs and Associates  
P.O. Box 44  
Delmont, PA 15626

RE: Project: HO:Senaca  
Pace Project No.: 30259123

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on July 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Samantha Bayura  
samantha.bayura@pacelabs.com  
(724)850-5622  
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates  
John A. Ducar, Cribbs & Associates, Inc.  
Jared Thorn, Cribbs & Associates, Inc.



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: HO:Senaca

Pace Project No.: 30259123

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

---

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE ANALYTE COUNT

Project: HO:Senaca

Pace Project No.: 30259123

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30259123001	MW-16	EPA 8260B	JAS	13	PASI-PA

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## PROJECT NARRATIVE

Project: HO:Senaca  
Pace Project No.: 30259123

---

**Method:** EPA 8260B  
**Description:** 8260B MSV  
**Client:** Cribbs and Associates  
**Date:** July 20, 2018

### General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO:Senaca

Pace Project No.: 30259123

**Sample:** MW-16 **Lab ID:** 30259123001 Collected: 07/10/18 11:45 Received: 07/13/18 12:15 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		07/18/18 16:17	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		07/18/18 16:17	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		07/18/18 16:17	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		07/18/18 16:17	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		07/18/18 16:17	91-20-3	
Toluene	ND	ug/L	5.0	1		07/18/18 16:17	108-88-3	
1,2,4-Trimethylbenzene	<b>2.0</b>	ug/L	1.0	1		07/18/18 16:17	95-63-6	
1,3,5-Trimethylbenzene	<b>2.1</b>	ug/L	1.0	1		07/18/18 16:17	108-67-8	
Xylene (Total)	<b>19.4</b>	ug/L	5.0	1		07/18/18 16:17	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	94	%	80-120	1		07/18/18 16:17	2037-26-5	
4-Bromofluorobenzene (S)	102	%	79-129	1		07/18/18 16:17	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-120	1		07/18/18 16:17	17060-07-0	
Dibromofluoromethane (S)	97	%	80-120	1		07/18/18 16:17	1868-53-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO:Senaca  
Pace Project No.: 30259123

QC Batch:	306237	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30259123001		

METHOD BLANK: 1497364 Matrix: Water  
Associated Lab Samples: 30259123001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	07/18/18 10:23	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	07/18/18 10:23	
Benzene	ug/L	ND	1.0	07/18/18 10:23	
Ethylbenzene	ug/L	ND	1.0	07/18/18 10:23	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	07/18/18 10:23	
Methyl-tert-butyl ether	ug/L	ND	1.0	07/18/18 10:23	
Naphthalene	ug/L	ND	2.0	07/18/18 10:23	
Toluene	ug/L	ND	1.0	07/18/18 10:23	
Xylene (Total)	ug/L	ND	3.0	07/18/18 10:23	
1,2-Dichloroethane-d4 (S)	%	95	80-120	07/18/18 10:23	
4-Bromofluorobenzene (S)	%	102	79-129	07/18/18 10:23	
Dibromofluoromethane (S)	%	96	80-120	07/18/18 10:23	
Toluene-d8 (S)	%	95	80-120	07/18/18 10:23	

LABORATORY CONTROL SAMPLE: 1497365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.4	107	70-130	
1,3,5-Trimethylbenzene	ug/L	20	21.1	105	70-130	
Benzene	ug/L	20	19.6	98	70-130	
Ethylbenzene	ug/L	20	20.7	104	70-130	
Isopropylbenzene (Cumene)	ug/L	20	21.4	107	70-130	
Methyl-tert-butyl ether	ug/L	20	22.4	112	70-130	
Naphthalene	ug/L	20	23.6	118	70-130	
Toluene	ug/L	20	20.0	100	70-130	
Xylene (Total)	ug/L	60	61.5	103	70-130	
1,2-Dichloroethane-d4 (S)	%			94	80-120	
4-Bromofluorobenzene (S)	%			101	79-129	
Dibromofluoromethane (S)	%			96	80-120	
Toluene-d8 (S)	%			100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1497388 1497389

Parameter	Units	30259111003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	21.7	22.1	108	110	75-125	2	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	21.6	21.6	108	108	76-121	0	
Benzene	ug/L	ND	20	20	20.4	20.9	102	104	67-121	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO:Senaca

Pace Project No.: 30259123

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1497388 1497389											
		30259111003	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	20.9	21.8	104	109	70-127	5	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	22.0	22.2	110	111	80-122	1	
Methyl-tert-butyl ether	ug/L	ND	20	20	21.7	21.4	109	107	79-135	1	
Naphthalene	ug/L	ND	20	20	23.5	23.5	118	118	62-131	0	
Toluene	ug/L	ND	20	20	20.7	21.2	104	106	77-125	2	
Xylene (Total)	ug/L	ND	60	60	62.2	64.0	104	107	69-128	3	
1,2-Dichloroethane-d4 (S)	%						88	96	80-120		
4-Bromofluorobenzene (S)	%						102	100	79-129		
Dibromofluoromethane (S)	%						96	97	80-120		
Toluene-d8 (S)	%						99	99	80-120		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## QUALIFIERS

Project: HO:Senaca  
Pace Project No.: 30259123

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO:Senaca

Pace Project No.: 30259123

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30259123001	MW-16	EPA 8260B	306237		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cribbs and Associates Inc	Report To:	Gray Cribbs	Attention:	Gray Cribbs
Address:	PO Box 44 Belmont PA 15602	Copy To:	Robert Patterson	Company Name:	Cribbs and Associates Inc
Email To:	Delmont PA 15602	Purchase Order No.:		Address:	PO Box 44 Belmont PA 15602
Phone:	724-454-2310	Project Name:	HO: Sameer	Reference:	
Requested Due Date:	TAT: Standard	Project Number:		Pace Project Manager:	Samantha Bryner
REGULATORY AGENCY		REGULATORY AGENCY		REGULATORY AGENCY	
<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER		<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER		<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	
Site Location		Site Location		Site Location	
STATE:		STATE:		STATE:	

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)												Residual Chlorine (Y/N)	Pace Project No./Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME		
1	Mw-16	Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	WTG			7/13/18	3			X	SEE BELOW												001
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS	
Analyze for PAHs		Jared Thern		7/13/18		1700		Jared Thern		7/13/18		1215		Sealed Cooler	
NEW SHORTLIST for		Jared Thern		7/14/18		1215		Jared Thern		7/13/18		1215		Ice (Y/N)	
Unleaded Gasoline		Jared Thern						Jared Thern						Custody (Y/N)	
		Jared Thern						Jared Thern						Received on	
		Jared Thern						Jared Thern						Temp in °C	
		Jared Thern						Jared Thern						Samples Intact (Y/N)	

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

# Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name:

Cribbs + Assoc

Project #

30259123

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other

Tracking #: NA

Label

LIMS Login

BUM

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

7

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp

4.9 °C

Correction Factor: -0.1 °C

Final Temp: 4.8 °C

Temp should be above freezing to 6°C

pH paper Lot#

NA

Date and Initials of person examining

contents: 7/13/18 OVB

Comments:

Yes No N/A

Chain of Custody Present:

/

1.

Chain of Custody Filled Out:

/

2.

Chain of Custody Relinquished:

/

3.

Sampler Name & Signature on COC:

/

4.

Sample Labels match COC:

/

5.

-Includes date/time/ID

Matrix:

WT

Samples Arrived within Hold Time:

/

6.

Short Hold Time Analysis (<72hr remaining):

/

7.

Rush Turn Around Time Requested:

/

8.

Sufficient Volume:

/

9.

Correct Containers Used:

/

10.

-Pace Containers Used:

/

Containers Intact:

/

11.

Orthophosphate field filtered

/

12.

Hex Cr Aqueous Compliance/NPDES sample field filtered

/

13.

Organic Samples checked for dechlorination:

/

14.

Filtered volume received for Dissolved tests

/

15.

All containers have been checked for preservation.

/

16.

All containers needing preservation are found to be in compliance with EPA recommendation.

exceptions: VOA, coliform, TOC, O&G, Phenolics

Initial when completed

OVB

Date/time of preservation

Lot # of added preservative

Headspace in VOA Vials (>6mm):

/

17.

Trip Blank Present:

/

18.

Trip Blank Custody Seals Present

/

Rad Aqueous Samples Screened > 0.5 mrem/hr

/

Initial when completed:

Date:

Client Notification/ Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

August 16, 2018

Mr. Gary Cribbs  
Cribbs and Associates  
P.O. Box 44  
Delmont, PA 15626

RE: Project: HO: Seneca  
Pace Project No.: 30261962

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on August 10, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Samantha Bayura  
samantha.bayura@pacelabs.com  
(724)850-5622  
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates  
John A. Ducar, Cribbs & Associates, Inc.  
Jared Thorn, Cribbs & Associates, Inc.



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: HO: Seneca

Pace Project No.: 30261962

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

---

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE ANALYTE COUNT

Project: HO: Seneca

Pace Project No.: 30261962

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30261962001	MW-1	EPA 8260B	LEL	13	PASI-PA
30261962002	MW-2	EPA 8260B	LEL	13	PASI-PA
30261962003	MW-3	EPA 8260B	LEL	13	PASI-PA
30261962004	MW-4	EPA 8260B	LEL	13	PASI-PA
30261962005	MW-5	EPA 8260B	LEL	13	PASI-PA
30261962006	MW-6	EPA 8260B	LEL	13	PASI-PA
30261962007	MW-7	EPA 8260B	LEL	13	PASI-PA
30261962008	MW-8	EPA 8260B	LEL	13	PASI-PA
30261962009	MW-9	EPA 8260B	LEL	13	PASI-PA
30261962010	MW-10	EPA 8260B	LEL	13	PASI-PA
30261962011	MW-11	EPA 8260B	LEL	13	PASI-PA
30261962012	MW-12	EPA 8260B	LEL	13	PASI-PA
30261962013	MW-13	EPA 8260B	LEL	13	PASI-PA
30261962014	MW-15	EPA 8260B	LEL	13	PASI-PA
30261962015	MW-16	EPA 8260B	LEL	13	PASI-PA
30261962016	MW-17	EPA 8260B	LEL	13	PASI-PA
30261962017	Upstream	EPA 8260B	LEL	13	PASI-PA
30261962018	Downstream	EPA 8260B	LEL	13	PASI-PA

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## PROJECT NARRATIVE

Project: HO: Seneca  
Pace Project No.: 30261962

---

**Method:** EPA 8260B  
**Description:** 8260B MSV  
**Client:** Cribbs and Associates  
**Date:** August 16, 2018

### General Information:

18 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 309659

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30261962007

ML: Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

- MS (Lab ID: 1513064)
  - Methyl-tert-butyl ether
- MSD (Lab ID: 1513065)
  - 1,2,4-Trimethylbenzene
  - 1,3,5-Trimethylbenzene
  - Benzene
  - Ethylbenzene
  - Isopropylbenzene (Cumene)
  - Naphthalene
  - Toluene

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## PROJECT NARRATIVE

Project: HO: Seneca

Pace Project No.: 30261962

---

**Method:** EPA 8260B

**Description:** 8260B MSV

**Client:** Cribbs and Associates

**Date:** August 16, 2018

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-1** **Lab ID: 30261962001** Collected: 08/08/18 15:35 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	32.5	ug/L	5.0	1		08/15/18 17:46	71-43-2	
Ethylbenzene	132	ug/L	5.0	1		08/15/18 17:46	100-41-4	
Isopropylbenzene (Cumene)	21.4	ug/L	5.0	1		08/15/18 17:46	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 17:46	1634-04-4	
Naphthalene	19.8	ug/L	5.0	1		08/15/18 17:46	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 17:46	108-88-3	
1,2,4-Trimethylbenzene	91.4	ug/L	5.0	1		08/15/18 17:46	95-63-6	
1,3,5-Trimethylbenzene	13.7	ug/L	5.0	1		08/15/18 17:46	108-67-8	
Xylene (Total)	56.2	ug/L	5.0	1		08/15/18 17:46	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	98	%.	80-120	1		08/15/18 17:46	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		08/15/18 17:46	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%.	80-120	1		08/15/18 17:46	17060-07-0	
Dibromofluoromethane (S)	97	%.	80-120	1		08/15/18 17:46	1868-53-7	

**Sample: MW-2** **Lab ID: 30261962002** Collected: 08/09/18 14:10 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	968	ug/L	50.0	10		08/15/18 18:36	71-43-2	
Ethylbenzene	369	ug/L	5.0	1		08/15/18 18:11	100-41-4	
Isopropylbenzene (Cumene)	33.3	ug/L	5.0	1		08/15/18 18:11	98-82-8	
Methyl-tert-butyl ether	15.7	ug/L	5.0	1		08/15/18 18:11	1634-04-4	
Naphthalene	72.6	ug/L	5.0	1		08/15/18 18:11	91-20-3	
Toluene	7.4	ug/L	5.0	1		08/15/18 18:11	108-88-3	
1,2,4-Trimethylbenzene	302	ug/L	1.0	1		08/15/18 18:11	95-63-6	
1,3,5-Trimethylbenzene	96.2	ug/L	1.0	1		08/15/18 18:11	108-67-8	
Xylene (Total)	357	ug/L	5.0	1		08/15/18 18:11	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	103	%.	80-120	1		08/15/18 18:11	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	79-129	1		08/15/18 18:11	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%.	80-120	1		08/15/18 18:11	17060-07-0	
Dibromofluoromethane (S)	99	%.	80-120	1		08/15/18 18:11	1868-53-7	

**Sample: MW-3** **Lab ID: 30261962003** Collected: 08/09/18 14:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	12600	ug/L	500	100		08/15/18 21:59	71-43-2	
Ethylbenzene	2990	ug/L	500	100		08/15/18 21:59	100-41-4	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-3** **Lab ID: 30261962003** Collected: 08/09/18 14:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Isopropylbenzene (Cumene)	90.9	ug/L	25.0	5		08/15/18 21:34	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	25.0	5		08/15/18 21:34	1634-04-4	
Naphthalene	580	ug/L	25.0	5		08/15/18 21:34	91-20-3	
Toluene	2800	ug/L	500	100		08/15/18 21:59	108-88-3	
1,2,4-Trimethylbenzene	2510	ug/L	100	100		08/15/18 21:59	95-63-6	
1,3,5-Trimethylbenzene	712	ug/L	5.0	5		08/15/18 21:34	108-67-8	
Xylene (Total)	16000	ug/L	500	100		08/15/18 21:59	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	104	%.	80-120	5		08/15/18 21:34	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	79-129	5		08/15/18 21:34	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%.	80-120	5		08/15/18 21:34	17060-07-0	
Dibromofluoromethane (S)	95	%.	80-120	5		08/15/18 21:34	1868-53-7	

**Sample: MW-4** **Lab ID: 30261962004** Collected: 08/09/18 13:35 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	1520	ug/L	50.0	10		08/15/18 19:27	71-43-2	
Ethylbenzene	445	ug/L	50.0	10		08/15/18 19:27	100-41-4	
Isopropylbenzene (Cumene)	67.4	ug/L	5.0	1		08/15/18 19:02	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 19:02	1634-04-4	
Naphthalene	146	ug/L	5.0	1		08/15/18 19:02	91-20-3	
Toluene	18.5	ug/L	5.0	1		08/15/18 19:02	108-88-3	
1,2,4-Trimethylbenzene	200	ug/L	1.0	1		08/15/18 19:02	95-63-6	
1,3,5-Trimethylbenzene	24.4	ug/L	1.0	1		08/15/18 19:02	108-67-8	
Xylene (Total)	146	ug/L	5.0	1		08/15/18 19:02	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	103	%.	80-120	1		08/15/18 19:02	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		08/15/18 19:02	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%.	80-120	1		08/15/18 19:02	17060-07-0	
Dibromofluoromethane (S)	97	%.	80-120	1		08/15/18 19:02	1868-53-7	

**Sample: MW-5** **Lab ID: 30261962005** Collected: 08/09/18 15:25 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	8080	ug/L	250	50		08/15/18 21:08	71-43-2	
Ethylbenzene	2350	ug/L	250	50		08/15/18 21:08	100-41-4	
Isopropylbenzene (Cumene)	97.5	ug/L	5.0	1		08/15/18 20:43	98-82-8	
Methyl-tert-butyl ether	54.1	ug/L	5.0	1		08/15/18 20:43	1634-04-4	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-5** **Lab ID: 30261962005** Collected: 08/09/18 15:25 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Naphthalene	1100	ug/L	250	50		08/15/18 21:08	91-20-3	
Toluene	15.9	ug/L	5.0	1		08/15/18 20:43	108-88-3	
1,2,4-Trimethylbenzene	2290	ug/L	250	50		08/15/18 21:08	95-63-6	
1,3,5-Trimethylbenzene	660	ug/L	250	50		08/15/18 21:08	108-67-8	
Xylene (Total)	4770	ug/L	250	50		08/15/18 21:08	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	112	%.	80-120	1		08/15/18 20:43	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		08/15/18 20:43	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%.	80-120	1		08/15/18 20:43	17060-07-0	
Dibromofluoromethane (S)	97	%.	80-120	1		08/15/18 20:43	1868-53-7	

**Sample: MW-6** **Lab ID: 30261962006** Collected: 08/09/18 13:00 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 15:39	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 15:39	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 15:39	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 15:39	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 15:39	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 15:39	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 15:39	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 15:39	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 15:39	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	98	%.	80-120	1		08/15/18 15:39	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	79-129	1		08/15/18 15:39	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%.	80-120	1		08/15/18 15:39	17060-07-0	
Dibromofluoromethane (S)	100	%.	80-120	1		08/15/18 15:39	1868-53-7	

**Sample: MW-7** **Lab ID: 30261962007** Collected: 08/09/18 12:20 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 13:32	71-43-2	ML
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 13:32	100-41-4	ML
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 13:32	98-82-8	ML
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 13:32	1634-04-4	ML
Naphthalene	ND	ug/L	5.0	1		08/15/18 13:32	91-20-3	ML
Toluene	ND	ug/L	5.0	1		08/15/18 13:32	108-88-3	ML

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-7** **Lab ID: 30261962007** Collected: 08/09/18 12:20 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 13:32	95-63-6	ML
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 13:32	108-67-8	ML
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 13:32	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	98	%.	80-120	1		08/15/18 13:32	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	79-129	1		08/15/18 13:32	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%.	80-120	1		08/15/18 13:32	17060-07-0	
Dibromofluoromethane (S)	98	%.	80-120	1		08/15/18 13:32	1868-53-7	

**Sample: MW-8** **Lab ID: 30261962008** Collected: 08/09/18 13:40 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 17:20	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 17:20	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 17:20	98-82-8	
Methyl-tert-butyl ether	226	ug/L	5.0	1		08/15/18 17:20	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 17:20	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 17:20	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 17:20	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 17:20	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 17:20	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	96	%.	80-120	1		08/15/18 17:20	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	79-129	1		08/15/18 17:20	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%.	80-120	1		08/15/18 17:20	17060-07-0	
Dibromofluoromethane (S)	98	%.	80-120	1		08/15/18 17:20	1868-53-7	

**Sample: MW-9** **Lab ID: 30261962009** Collected: 08/08/18 12:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 13:57	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 13:57	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 13:57	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 13:57	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 13:57	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 13:57	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 13:57	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 13:57	108-67-8	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-9** **Lab ID: 30261962009** Collected: 08/08/18 12:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 13:57	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	97	%.	80-120	1		08/15/18 13:57	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		08/15/18 13:57	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%.	80-120	1		08/15/18 13:57	17060-07-0	
Dibromofluoromethane (S)	102	%.	80-120	1		08/15/18 13:57	1868-53-7	

**Sample: MW-10** **Lab ID: 30261962010** Collected: 08/08/18 12:00 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 16:04	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 16:04	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 16:04	98-82-8	
Methyl-tert-butyl ether	16.3	ug/L	5.0	1		08/15/18 16:04	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 16:04	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 16:04	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 16:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 16:04	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 16:04	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	101	%.	80-120	1		08/15/18 16:04	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	79-129	1		08/15/18 16:04	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%.	80-120	1		08/15/18 16:04	17060-07-0	
Dibromofluoromethane (S)	97	%.	80-120	1		08/15/18 16:04	1868-53-7	

**Sample: MW-11** **Lab ID: 30261962011** Collected: 08/08/18 10:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 16:29	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 16:29	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 16:29	98-82-8	
Methyl-tert-butyl ether	15.7	ug/L	5.0	1		08/15/18 16:29	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 16:29	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 16:29	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 16:29	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 16:29	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 16:29	1330-20-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30261962

**Sample: MW-11** **Lab ID: 30261962011** Collected: 08/08/18 10:50 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
<b>Surrogates</b>								
Toluene-d8 (S)	99	%.	80-120	1		08/15/18 16:29	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		08/15/18 16:29	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%.	80-120	1		08/15/18 16:29	17060-07-0	
Dibromofluoromethane (S)	100	%.	80-120	1		08/15/18 16:29	1868-53-7	

**Sample: MW-12** **Lab ID: 30261962012** Collected: 08/08/18 10:20 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 14:22	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 14:22	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 14:22	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 14:22	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 14:22	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 14:22	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 14:22	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 14:22	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 14:22	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	101	%.	80-120	1		08/15/18 14:22	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		08/15/18 14:22	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%.	80-120	1		08/15/18 14:22	17060-07-0	
Dibromofluoromethane (S)	100	%.	80-120	1		08/15/18 14:22	1868-53-7	

**Sample: MW-13** **Lab ID: 30261962013** Collected: 08/09/18 11:10 Received: 08/10/18 16:06 Matrix: Water

Comments: • Headspace in one vial.  
• Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 14:48	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 14:48	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 14:48	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 14:48	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 14:48	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 14:48	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 14:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 14:48	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 14:48	1330-20-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30261962

**Sample: MW-13** **Lab ID: 30261962013** Collected: 08/09/18 11:10 Received: 08/10/18 16:06 Matrix: Water

Comments: • Headspace in one vial.  
• Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Surrogates								
Toluene-d8 (S)	96	%.	80-120	1		08/15/18 14:48	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	79-129	1		08/15/18 14:48	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%.	80-120	1		08/15/18 14:48	17060-07-0	
Dibromofluoromethane (S)	99	%.	80-120	1		08/15/18 14:48	1868-53-7	

**Sample: MW-15** **Lab ID: 30261962014** Collected: 08/08/18 14:40 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		08/15/18 15:13	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 15:13	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 15:13	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 15:13	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 15:13	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 15:13	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 15:13	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 15:13	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 15:13	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	99	%.	80-120	1		08/15/18 15:13	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	79-129	1		08/15/18 15:13	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%.	80-120	1		08/15/18 15:13	17060-07-0	
Dibromofluoromethane (S)	99	%.	80-120	1		08/15/18 15:13	1868-53-7	

**Sample: MW-16** **Lab ID: 30261962015** Collected: 08/09/18 14:00 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		08/15/18 16:55	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 16:55	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 16:55	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 16:55	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 16:55	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 16:55	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 16:55	95-63-6	
1,3,5-Trimethylbenzene	2.2	ug/L	1.0	1		08/15/18 16:55	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 16:55	1330-20-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## ANALYTICAL RESULTS

Project: HO: Seneca  
Pace Project No.: 30261962

**Sample: MW-16** **Lab ID: 30261962015** Collected: 08/09/18 14:00 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
<b>Surrogates</b>								
Toluene-d8 (S)	99	%.	80-120	1		08/15/18 16:55	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		08/15/18 16:55	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%.	80-120	1		08/15/18 16:55	17060-07-0	
Dibromofluoromethane (S)	99	%.	80-120	1		08/15/18 16:55	1868-53-7	

**Sample: MW-17** **Lab ID: 30261962016** Collected: 08/09/18 14:30 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	1630	ug/L	50.0	10		08/15/18 20:18	71-43-2	
Ethylbenzene	601	ug/L	50.0	10		08/15/18 20:18	100-41-4	
Isopropylbenzene (Cumene)	22.3	ug/L	5.0	1		08/15/18 19:52	98-82-8	
Methyl-tert-butyl ether	33.1	ug/L	5.0	1		08/15/18 19:52	1634-04-4	
Naphthalene	130	ug/L	5.0	1		08/15/18 19:52	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 19:52	108-88-3	
1,2,4-Trimethylbenzene	714	ug/L	10.0	10		08/15/18 20:18	95-63-6	
1,3,5-Trimethylbenzene	204	ug/L	1.0	1		08/15/18 19:52	108-67-8	
Xylene (Total)	2710	ug/L	50.0	10		08/15/18 20:18	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	104	%.	80-120	1		08/15/18 19:52	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	79-129	1		08/15/18 19:52	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%.	80-120	1		08/15/18 19:52	17060-07-0	
Dibromofluoromethane (S)	93	%.	80-120	1		08/15/18 19:52	1868-53-7	

**Sample: Upstream** **Lab ID: 30261962017** Collected: 08/09/18 13:15 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		08/15/18 18:49	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 18:49	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 18:49	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 18:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 18:49	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 18:49	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 18:49	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 18:49	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 18:49	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	99	%.	80-120	1		08/15/18 18:49	2037-26-5	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO: Seneca

Pace Project No.: 30261962

**Sample: Upstream** **Lab ID: 30261962017** Collected: 08/09/18 13:15 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B						
Surrogates								
4-Bromofluorobenzene (S)	101	%.	79-129	1		08/15/18 18:49	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%.	80-120	1		08/15/18 18:49	17060-07-0	
Dibromofluoromethane (S)	104	%.	80-120	1		08/15/18 18:49	1868-53-7	

**Sample: Downstream** **Lab ID: 30261962018** Collected: 08/09/18 10:30 Received: 08/10/18 16:06 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b>		Analytical Method: EPA 8260B						
Benzene	ND	ug/L	5.0	1		08/15/18 19:14	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		08/15/18 19:14	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		08/15/18 19:14	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		08/15/18 19:14	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		08/15/18 19:14	91-20-3	
Toluene	ND	ug/L	5.0	1		08/15/18 19:14	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 19:14	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		08/15/18 19:14	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		08/15/18 19:14	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	96	%.	80-120	1		08/15/18 19:14	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	79-129	1		08/15/18 19:14	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%.	80-120	1		08/15/18 19:14	17060-07-0	
Dibromofluoromethane (S)	96	%.	80-120	1		08/15/18 19:14	1868-53-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30261962

QC Batch:	309659	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 8260B	Analysis Description:	8260B MSV UST-WATER
Associated Lab Samples:	30261962001, 30261962002, 30261962003, 30261962004, 30261962005, 30261962006, 30261962007, 30261962008, 30261962009, 30261962010, 30261962011, 30261962012, 30261962013, 30261962014, 30261962015, 30261962016		

METHOD BLANK: 1513062

Matrix: Water

Associated Lab Samples: 30261962001, 30261962002, 30261962003, 30261962004, 30261962005, 30261962006, 30261962007, 30261962008, 30261962009, 30261962010, 30261962011, 30261962012, 30261962013, 30261962014, 30261962015, 30261962016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	08/15/18 13:06	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	08/15/18 13:06	
Benzene	ug/L	ND	1.0	08/15/18 13:06	
Ethylbenzene	ug/L	ND	1.0	08/15/18 13:06	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	08/15/18 13:06	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/15/18 13:06	
Naphthalene	ug/L	ND	2.0	08/15/18 13:06	
Toluene	ug/L	ND	1.0	08/15/18 13:06	
Xylene (Total)	ug/L	ND	3.0	08/15/18 13:06	
1,2-Dichloroethane-d4 (S)	%	93	80-120	08/15/18 13:06	
4-Bromofluorobenzene (S)	%	96	79-129	08/15/18 13:06	
Dibromofluoromethane (S)	%	101	80-120	08/15/18 13:06	
Toluene-d8 (S)	%	99	80-120	08/15/18 13:06	

LABORATORY CONTROL SAMPLE: 1513063

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.4	97	70-130	
1,3,5-Trimethylbenzene	ug/L	20	19.0	95	70-130	
Benzene	ug/L	20	18.3	92	70-130	
Ethylbenzene	ug/L	20	20.0	100	70-130	
Isopropylbenzene (Cumene)	ug/L	20	19.5	97	70-130	
Methyl-tert-butyl ether	ug/L	20	20.6	103	70-130	
Naphthalene	ug/L	20	21.0	105	70-130	
Toluene	ug/L	20	18.5	93	70-130	
Xylene (Total)	ug/L	60	59.3	99	70-130	
1,2-Dichloroethane-d4 (S)	%			96	80-120	
4-Bromofluorobenzene (S)	%			101	79-129	
Dibromofluoromethane (S)	%			98	80-120	
Toluene-d8 (S)	%			97	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30261962

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1513064 1513065											
Parameter	Units	30261962007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	18.5	.84J	92	4	75-125		ML
1,3,5-Trimethylbenzene	ug/L	ND	20	20	18.0	.29J	90	1	76-121		ML
Benzene	ug/L	ND	20	20	17.9	.58J	90	3	67-121		ML
Ethylbenzene	ug/L	ND	20	20	18.5	.47J	93	2	70-127		ML
Isopropylbenzene (Cumene)	ug/L	ND	20	20	18.2	.28J	91	1	80-122		ML
Methyl-tert-butyl ether	ug/L	ND	20	20	ND	20.0	0	100	79-135		ML
Naphthalene	ug/L	ND	20	20	19.9	1.8J	99	9	62-131		ML
Toluene	ug/L	ND	20	20	17.2	.32J	86	2	77-125		ML
Xylene (Total)	ug/L	ND	60	60	55.7	1.9J	93	3	69-128		
1,2-Dichloroethane-d4 (S)	%.						96	94	80-120		
4-Bromofluorobenzene (S)	%.						100	99	79-129		
Dibromofluoromethane (S)	%.						97	99	80-120		
Toluene-d8 (S)	%.						99	99	80-120		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO: Seneca  
Pace Project No.: 30261962

QC Batch: 309668 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER  
Associated Lab Samples: 30261962017, 30261962018

METHOD BLANK: 1513110 Matrix: Water  
Associated Lab Samples: 30261962017, 30261962018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	08/15/18 13:19	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	08/15/18 13:19	
Benzene	ug/L	ND	1.0	08/15/18 13:19	
Ethylbenzene	ug/L	ND	1.0	08/15/18 13:19	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	08/15/18 13:19	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/15/18 13:19	
Naphthalene	ug/L	ND	2.0	08/15/18 13:19	
Toluene	ug/L	ND	1.0	08/15/18 13:19	
Xylene (Total)	ug/L	ND	3.0	08/15/18 13:19	
1,2-Dichloroethane-d4 (S)	%	90	80-120	08/15/18 13:19	
4-Bromofluorobenzene (S)	%	99	79-129	08/15/18 13:19	
Dibromofluoromethane (S)	%	99	80-120	08/15/18 13:19	
Toluene-d8 (S)	%	98	80-120	08/15/18 13:19	

LABORATORY CONTROL SAMPLE: 1513111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.9	100	70-130	
1,3,5-Trimethylbenzene	ug/L	20	19.9	99	70-130	
Benzene	ug/L	20	18.8	94	70-130	
Ethylbenzene	ug/L	20	20.0	100	70-130	
Isopropylbenzene (Cumene)	ug/L	20	20.4	102	70-130	
Methyl-tert-butyl ether	ug/L	20	20.2	101	70-130	
Naphthalene	ug/L	20	21.4	107	70-130	
Toluene	ug/L	20	19.2	96	70-130	
Xylene (Total)	ug/L	60	61.7	103	70-130	
1,2-Dichloroethane-d4 (S)	%			88	80-120	
4-Bromofluorobenzene (S)	%			100	79-129	
Dibromofluoromethane (S)	%			95	80-120	
Toluene-d8 (S)	%			99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1513112 1513113

Parameter	Units	30261989001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	15.9	19.0	80	95	75-125	18	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	16.1	18.8	80	94	76-121	16	
Benzene	ug/L	ND	20	20	15.6	18.6	78	93	67-121	18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO: Seneca

Pace Project No.: 30261962

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1513112 1513113											
			MS	MSD					% Rec		
	30261989001		Spike	Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	17.2	20.5	86	103	70-127	17	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	16.4	19.5	82	98	80-122	17	
Methyl-tert-butyl ether	ug/L	ND	20	20	18.3	19.6	87	93	79-135	7	
Naphthalene	ug/L	ND	20	20	17.6	18.1	88	91	62-131	3	
Toluene	ug/L	ND	20	20	15.9	19.0	80	95	77-125	17	
Xylene (Total)	ug/L	ND	60	60	52.1	60.7	87	101	69-128	15	
1,2-Dichloroethane-d4 (S)	%.						94	96	80-120		
4-Bromofluorobenzene (S)	%.						100	102	79-129		
Dibromofluoromethane (S)	%.						96	97	80-120		
Toluene-d8 (S)	%.						102	100	80-120		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: HO: Seneca  
Pace Project No.: 30261962

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

ML Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO: Seneca

Pace Project No.: 30261962

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30261962001	MW-1	EPA 8260B	309659		
30261962002	MW-2	EPA 8260B	309659		
30261962003	MW-3	EPA 8260B	309659		
30261962004	MW-4	EPA 8260B	309659		
30261962005	MW-5	EPA 8260B	309659		
30261962006	MW-6	EPA 8260B	309659		
30261962007	MW-7	EPA 8260B	309659		
30261962008	MW-8	EPA 8260B	309659		
30261962009	MW-9	EPA 8260B	309659		
30261962010	MW-10	EPA 8260B	309659		
30261962011	MW-11	EPA 8260B	309659		
30261962012	MW-12	EPA 8260B	309659		
30261962013	MW-13	EPA 8260B	309659		
30261962014	MW-15	EPA 8260B	309659		
30261962015	MW-16	EPA 8260B	309659		
30261962016	MW-17	EPA 8260B	309659		
30261962017	Upstream	EPA 8260B	309668		
30261962018	Downstream	EPA 8260B	309668		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



WO#: 30261962



PaceAn  
www.pacean.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

30261962

<b>Section A</b> Required Client Information:		<b>Section C</b> Invoice Information:	
Company: <u>Cribbs and Associates, Inc.</u>	Report To: <u>Gary Cribbs</u>	Attention: <u>Gary Cribbs</u>	Page: <u>1</u> of <u>2</u>
Address: <u>PO Box 44</u>	Copy To: <u>Robert Bortner</u>	Company Name: <u>Cribbs and Associates, Inc.</u>	Invoice Number: <u>2261323</u>
Email To: <u>Delmont PA 15626</u>	Purchase Order No.: <u></u>	Address: <u>PO Box 44 Delmont PA 15626</u>	REGULATORY AGENCY
Phone: <u>724-454-9310</u>	Project Name: <u>HV: Service</u>	Pace Quote Reference: <u></u>	<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER
Requested Due Date/TAT: <u>STANDARD</u>	Project Number: <u></u>	Pace Project Manager: <u>Sanantha Bayara</u>	<input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER
		Site Location: <u>PA</u>	STATE: <u></u>

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE DW Drinking Water WT Water WW Waste Water P Product SL Soil/Solid OL Oil WP Wipe AR Air TS Tissue OT Other	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test ↑ Y/N ↑	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME			DATE	TIME	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	<u>John Duerksen / CTA</u>	<u>8-9-18</u>	<u>1700</u>	<u>John Duerksen / CTA</u>	<u>8/10/18</u>	<u>1545</u>	
	<u>John Duerksen / CTA</u>	<u>8/10/18</u>	<u>1606</u>	<u>John Duerksen / CTA</u>	<u>8/10/18</u>	<u>1600</u>	
Analyze all samples for PADEP NEW SHORTLIST for Unleaded Gasoline							
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: <u>Tyler J Vetter</u> SIGNATURE of SAMPLER: <u>[Signature]</u> DATE Signed (MM/DD/YYYY): <u>08/08/18</u>							
Temp in °C Received on Custody Sealed Cooler Samples Intact							

ORIGINAL

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: Crabb's and Associates, Inc	Report To: Gary Crabb's	Attention: Gary Crabb's	Company Name: Crabb's and Associates, Inc	REGULATORY AGENCY	Page: 2 of 2 2261346
Address: PO Box 44 Delmont PA 15626	Copy To: Robert Bitterman	Address: PO Box 44 Delmont PA 15626	Company Address: PO Box 44 Delmont PA 15626	REGULATORY AGENCY	
Email To: Crabb's@Crabb'sandassociates.com	Purchase Order No.:		Page Quote Reference:	<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	<input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER
Phone: 724-454-2316	Project Name: H/O: Seneca		Page Project Manager: Samantha Bayless	<input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	
Requested Due Date/TAT: Standard	Project Number:		Page Profile #:	Site Location	STATE: PA

[illegible]

Page 10



September 19, 2018

Mr. Gary Cribbs  
Cribbs and Associates  
P.O. Box 44  
Delmont, PA 15626

RE: Project: HO:Seneca  
Pace Project No.: 30265109

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on September 14, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Samantha Bayura  
samantha.bayura@pacelabs.com  
(724)850-5622  
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates  
John A. Ducar, Cribbs & Associates, Inc.  
Jared Thorn, Cribbs & Associates, Inc.



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: HO:Seneca

Pace Project No.: 30265109

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

---

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE ANALYTE COUNT

Project: HO:Seneca

Pace Project No.: 30265109

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30265109001	SB-36 5'	EPA 8260B	JEW	13	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## PROJECT NARRATIVE

Project: HO:Seneca  
Pace Project No.: 30265109

---

**Method:** EPA 8260B  
**Description:** 8260B MSV  
**Client:** Cribbs and Associates  
**Date:** September 19, 2018

### General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 5035A with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 313228

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 1529542)
- Methyl-tert-butyl ether

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: HO:Seneca  
Pace Project No.: 30265109

**Sample: SB-36 5'** **Lab ID: 30265109001** Collected: 09/13/18 11:50 Received: 09/14/18 12:55 Matrix: Solid

**Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.**

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	71-43-2	
Ethylbenzene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	1634-04-4	L1
Naphthalene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	91-20-3	
Toluene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.2	1	09/17/18 14:02	09/17/18 15:43	108-67-8	
Xylene (Total)	ND	ug/kg	12.6	1	09/17/18 14:02	09/17/18 15:43	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	97	%.	76-124	1	09/17/18 14:02	09/17/18 15:43	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	70-133	1	09/17/18 14:02	09/17/18 15:43	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%.	74-131	1	09/17/18 14:02	09/17/18 15:43	17060-07-0	
Dibromofluoromethane (S)	112	%.	71-130	1	09/17/18 14:02	09/17/18 15:43	1868-53-7	
<b>Percent Moisture</b> Analytical Method: ASTM D2974-87								
Percent Moisture	<b>14.1</b>	%	0.10	1		09/18/18 10:04		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## QUALITY CONTROL DATA

Project: HO:Seneca  
Pace Project No.: 30265109

QC Batch:	313228	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A	Analysis Description:	8260B MSV UST-SOIL
Associated Lab Samples:	30265109001		

METHOD BLANK: 1529541 Matrix: Solid  
Associated Lab Samples: 30265109001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	09/17/18 14:51	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	09/17/18 14:51	
Benzene	ug/kg	ND	5.0	09/17/18 14:51	
Ethylbenzene	ug/kg	ND	5.0	09/17/18 14:51	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	09/17/18 14:51	
Methyl-tert-butyl ether	ug/kg	ND	5.0	09/17/18 14:51	
Naphthalene	ug/kg	ND	5.0	09/17/18 14:51	
Toluene	ug/kg	ND	5.0	09/17/18 14:51	
Xylene (Total)	ug/kg	ND	15.0	09/17/18 14:51	
1,2-Dichloroethane-d4 (S)	%	108	74-131	09/17/18 14:51	
4-Bromofluorobenzene (S)	%	108	70-133	09/17/18 14:51	
Dibromofluoromethane (S)	%	103	71-130	09/17/18 14:51	
Toluene-d8 (S)	%	102	76-124	09/17/18 14:51	

LABORATORY CONTROL SAMPLE: 1529542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	18.3	92	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	18.1	90	70-130	
Benzene	ug/kg	20	19.0	95	70-130	
Ethylbenzene	ug/kg	20	17.9	90	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	17.8	89	70-130	
Methyl-tert-butyl ether	ug/kg	20	30.4	152	70-130	L1
Naphthalene	ug/kg	20	14.4	72	70-130	
Toluene	ug/kg	20	17.9	89	70-130	
Xylene (Total)	ug/kg	60	51.5	86	70-130	
1,2-Dichloroethane-d4 (S)	%			112	74-131	
4-Bromofluorobenzene (S)	%			106	70-133	
Dibromofluoromethane (S)	%			103	71-130	
Toluene-d8 (S)	%			100	76-124	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1529543 1529544

Parameter	Units	30265187001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/kg	ND	19.7	16.2	11.1	11.9	56	73	10-139	7	
1,3,5-Trimethylbenzene	ug/kg	ND	19.7	16.2	10.8	11.7	55	72	18-134	8	
Benzene	ug/kg	ND	19.7	16.2	12.4	11.3	63	70	44-120	9	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30265109

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1529543 1529544											
		30265187001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/kg	ND	19.7	16.2	11.9	11.6	60	71	33-121	2	
Isopropylbenzene (Cumene)	ug/kg	ND	19.7	16.2	11.1	11.6	56	72	11-152	4	
Methyl-tert-butyl ether	ug/kg	ND	19.7	16.2	14.5	13.4	74	83	29-132	8	
Naphthalene	ug/kg	ND	19.7	16.2	10.5	12.7	53	78	10-157	19	
Toluene	ug/kg	ND	19.7	16.2	11.2	10.4	57	64	40-114	8	
Xylene (Total)	ug/kg	ND	59.1	48.8	36.1	36.0	61	74	27-126	0	
1,2-Dichloroethane-d4 (S)	%.						90	103	74-131		
4-Bromofluorobenzene (S)	%.						107	97	70-133		
Dibromofluoromethane (S)	%.						95	101	71-130		
Toluene-d8 (S)	%.						90	91	76-124		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: HO:Seneca

Pace Project No.: 30265109

QC Batch: 313312

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30265109001

SAMPLE DUPLICATE: 1529845

Parameter	Units	30264767001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	11.1	12.8	14	

SAMPLE DUPLICATE: 1529846

Parameter	Units	30264767002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	8.9	9.5	6	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: HO:Seneca  
Pace Project No.: 30265109

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HO:Seneca

Pace Project No.: 30265109

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30265109001	SB-36 5'	EPA 5035A	313228	EPA 8260B	313236
30265109001	SB-36 5'	ASTM D2974-87	313312		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

# W0#: 30265109



Pace Analytical  
www.pacelabs.com



30265109

## 1-OF-CUSTODY / Analytical Request Document

1-Of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section C Invoice Information:	
Company: <u>Cribbs &amp; Associates, Inc.</u>	Report To: <u>Gary Cribbs</u>	Attention: <u>Gary Cribbs</u>	Page: <u>1</u> of <u>1</u>
Address: <u>PO Box 44</u>	Copy To: <u>Robert Botterman</u>	Company Name: <u>Cribbs &amp; Associates, Inc.</u>	2261357
<u>DelMar PA 15626</u>	Purchase Order No.: <u></u>	Address: <u>PO Box 44 DelMar PA 15626</u>	REGULATORY AGENCY
Email To: <u>G.Cribbs@CribbsandAssociates.com</u>	Project Name: <u>HO: Seneca</u>	Reference: <u></u>	<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER
Phone: <u>214-454-2310</u> Fax: <u></u>	Project Number: <u>Standard</u>	Site Location: <u>PA</u>	<input checked="" type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER
Requested Due Date/TAT: <u>Standard</u>		State: <u>PA</u>	

Section D Required Client Information				Section E Matrix Codes				Section F Sample ID				Section G Requested Analysis Filtered (Y/N)				Section H Preservatives				Section I Analysis Test				Section J Pace Project No./ Lab I.D.							
Item #	Matrix Code	Matrix I Code	Matrix II Code	Matrix III Code	Matrix IV Code	Matrix V Code	Matrix VI Code	Matrix VII Code	Matrix VIII Code	Matrix IX Code	Matrix X Code	Matrix XI Code	Matrix XII Code	Matrix XIII Code	Matrix XIV Code	Matrix XV Code	Matrix XVI Code	Matrix XVII Code	Matrix XVIII Code	Matrix XIX Code	Matrix XX Code	Matrix XXI Code	Matrix XXII Code	Matrix XXIII Code	Matrix XXIV Code	Matrix XXV Code	Matrix XXVI Code	Matrix XXVII Code	Matrix XXVIII Code	Matrix XXIX Code	Matrix XXX Code
1	SB-36	51																													
2																															
3																															
4																															
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

Section K Additional Comments		Section L Relinquished By / Affiliation		Section M Date		Section N Time		Section O Accepted By / Affiliation		Section P Date		Section Q Time		Section R Sample Conditions	
Analyze for PAPEP NEW Jarred Thorne Cribbs & Associates		9/14/18		1255		D.F. Cribbs		9/14/18		1255		5.4		Y N Y	
SHORTLIST for UNRENDER															
GASOLINE															

ORIGINAL

# Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name:

Cnbbs + Assoc

Project # 30265109

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other

Tracking #: N/A

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used 10

Type of Ice: Wet Blue None

Cooler Temperature

Observed Temp

5.3 °C

Correction Factor: 10.1 °C

Final Temp: 5.4 °C

Temp should be above freezing to 6°C

Label	DVB
LIMS Login	BUM

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	/			NA	9/14/18 JVB
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:	/				
Sample Labels match COC:	/				
-Includes date/time/ID Matrix: SL					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):	/				
Rush Turn Around Time Requested:	/				
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:	/				
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous Compliance/NPDES sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.			/		
All containers needing preservation are found to be in compliance with EPA recommendation.			/		
exceptions: VOA, coliform, TOC, O&G, Phenolics			/	Initial when completed JVB	Date/time of preservation
			/	Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Aqueous Samples Screened > 0.5 mrem/hr			/	Initial when completed:	Date:

## Client Notification/ Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)  
 \*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

October 11, 2018

Mr. Gary Cribbs  
Cribbs and Associates  
P.O. Box 44  
Delmont, PA 15626

RE: Project: Ho: Seneca  
Pace Project No.: 30266609

Dear Mr. Cribbs:

Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Samantha Bayura  
samantha.bayura@pacelabs.com  
(724)850-5622  
Project Manager

Enclosures

cc: Bob Botterman, Cribbs and Associates  
John A. Ducar, Cribbs & Associates, Inc.  
Jared Thorn, Cribbs & Associates, Inc.



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## CERTIFICATIONS

Project: Ho: Seneca  
Pace Project No.: 30266609

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
Florida/TNI Certification #: E87683  
Georgia Certification #: C040  
Guam Certification  
Hawaii Certification  
Idaho Certification  
Illinois Certification  
Indiana Certification  
Iowa Certification #: 391  
Kansas/TNI Certification #: E-10358  
Kentucky Certification #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

---

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE ANALYTE COUNT

Project: Ho: Seneca

Pace Project No.: 30266609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30266609001	MW-18	EPA 8260B	JAS	13	PASI-PA
30266609002	MW-19	EPA 8260B	JAS	13	PASI-PA

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## PROJECT NARRATIVE

Project: Ho: Seneca  
Pace Project No.: 30266609

---

**Method:** EPA 8260B  
**Description:** 8260B MSV  
**Client:** Cribbs and Associates  
**Date:** October 11, 2018

### General Information:

2 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: Ho: Seneca  
Pace Project No.: 30266609

**Sample: MW-18** **Lab ID: 30266609001** Collected: 09/27/18 11:45 Received: 09/28/18 10:40 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		10/10/18 20:40	71-43-2	
Ethylbenzene	50.3	ug/L	5.0	1		10/10/18 20:40	100-41-4	
Isopropylbenzene (Cumene)	14.7	ug/L	5.0	1		10/10/18 20:40	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		10/10/18 20:40	1634-04-4	
Naphthalene	50.2	ug/L	5.0	1		10/10/18 20:40	91-20-3	
Toluene	ND	ug/L	5.0	1		10/10/18 20:40	108-88-3	
1,2,4-Trimethylbenzene	366	ug/L	1.0	1		10/10/18 20:40	95-63-6	
1,3,5-Trimethylbenzene	51.8	ug/L	1.0	1		10/10/18 20:40	108-67-8	
Xylene (Total)	69.0	ug/L	5.0	1		10/10/18 20:40	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	101	%.	80-120	1		10/10/18 20:40	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	79-129	1		10/10/18 20:40	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%.	80-120	1		10/10/18 20:40	17060-07-0	
Dibromofluoromethane (S)	95	%.	80-120	1		10/10/18 20:40	1868-53-7	

**Sample: MW-19** **Lab ID: 30266609002** Collected: 09/27/18 10:45 Received: 09/28/18 10:40 Matrix: Water

Comments: • Trip blank not received for VOC analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV</b> Analytical Method: EPA 8260B								
Benzene	ND	ug/L	5.0	1		10/10/18 14:32	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1		10/10/18 14:32	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	1		10/10/18 14:32	98-82-8	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		10/10/18 14:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		10/10/18 14:32	91-20-3	
Toluene	ND	ug/L	5.0	1		10/10/18 14:32	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/10/18 14:32	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/10/18 14:32	108-67-8	
Xylene (Total)	ND	ug/L	5.0	1		10/10/18 14:32	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	95	%.	80-120	1		10/10/18 14:32	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	79-129	1		10/10/18 14:32	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%.	80-120	1		10/10/18 14:32	17060-07-0	
Dibromofluoromethane (S)	95	%.	80-120	1		10/10/18 14:32	1868-53-7	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: Ho: Seneca  
Pace Project No.: 30266609

QC Batch: 316103 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER  
Associated Lab Samples: 30266609001, 30266609002

METHOD BLANK: 1542791 Matrix: Water  
Associated Lab Samples: 30266609001, 30266609002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/10/18 10:50	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/10/18 10:50	
Benzene	ug/L	ND	1.0	10/10/18 10:50	
Ethylbenzene	ug/L	ND	1.0	10/10/18 10:50	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/10/18 10:50	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/10/18 10:50	
Naphthalene	ug/L	ND	2.0	10/10/18 10:50	
Toluene	ug/L	ND	1.0	10/10/18 10:50	
Xylene (Total)	ug/L	ND	3.0	10/10/18 10:50	
1,2-Dichloroethane-d4 (S)	%	101	80-120	10/10/18 10:50	
4-Bromofluorobenzene (S)	%	98	79-129	10/10/18 10:50	
Dibromofluoromethane (S)	%	96	80-120	10/10/18 10:50	
Toluene-d8 (S)	%	99	80-120	10/10/18 10:50	

LABORATORY CONTROL SAMPLE: 1542792

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.1	91	70-130	
1,3,5-Trimethylbenzene	ug/L	20	17.6	88	70-130	
Benzene	ug/L	20	16.1	81	70-130	
Ethylbenzene	ug/L	20	16.7	84	70-130	
Isopropylbenzene (Cumene)	ug/L	20	19.0	95	70-130	
Methyl-tert-butyl ether	ug/L	20	17.2	86	70-130	
Naphthalene	ug/L	20	21.9	110	70-130	
Toluene	ug/L	20	18.5	92	70-130	
Xylene (Total)	ug/L	60	55.0	92	70-130	
1,2-Dichloroethane-d4 (S)	%			102	80-120	
4-Bromofluorobenzene (S)	%			98	79-129	
Dibromofluoromethane (S)	%			95	80-120	
Toluene-d8 (S)	%			101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1543030 1543031

Parameter	Units	30266638001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20.5	21.5	102	108	75-125	5	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.5	21.1	103	105	76-121	3	
Benzene	ug/L	ND	20	20	20.4	19.7	102	99	67-121	4	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA

Project: Ho: Seneca

Pace Project No.: 30266609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1543030 1543031											
		30266638001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Ethylbenzene	ug/L	ND	20	20	21.0	21.7	105	109	70-127	3	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.2	21.3	101	106	80-122	5	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.0	19.1	95	95	79-135	0	
Naphthalene	ug/L	ND	20	20	21.1	21.5	105	108	62-131	2	
Toluene	ug/L	ND	20	20	22.3	22.5	111	113	77-125	1	
Xylene (Total)	ug/L	ND	60	60	64.0	63.2	107	105	69-128	1	
1,2-Dichloroethane-d4 (S)	%.						100	105	80-120		
4-Bromofluorobenzene (S)	%.						102	98	79-129		
Dibromofluoromethane (S)	%.						94	97	80-120		
Toluene-d8 (S)	%.						103	103	80-120		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: Ho: Seneca  
Pace Project No.: 30266609

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ho: Seneca

Pace Project No.: 30266609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30266609001	MW-18	EPA 8260B	316103		
30266609002	MW-19	EPA 8260B	316103		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.





**Section A**  
Required Client Information:

Company: Cribbs & Associates, Inc.  
Address: PO Box 44  
Delmont PA 15626  
Email To: Cribbs@cribbsandassociates.com  
Phone: 724-454-2310 Fax:  
Requested Due Date/TAT: 5 Tardad

30266609

11-0000 INFORMATION

Report To: Gary Cribbs  
Copy To: Robert Betteman  
Purchase Order No.:  
Project Name: HQ: Seneca  
Project Number:

Attention: Cribbs & Associates, Inc.  
Company Name:  
Address: PO Box 44 Delmont PA 15626  
Pace Quote  
Reference:  
Pace Project  
Manager: Seneca The Bayou  
Pace Profile #:  
Site Location  
STATE: PA

**REGULATORY AGENCY**

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER  
☒ UST ☐ RCRA ☐ OTHER

Page: 1 of 1

2261359

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			Unpreserved H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub> HCl NaOH Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Methanol Other														
1	MW-18	DW WT WW P SL OL WP AR TS OT	WT	9/27/18 11:45	9/27/18 11:45		3															001
2	MW-19		WT	9/27/18 10:45	9/27/18 10:45		3															002
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
							Temp in °C	Received on	Custody	Sealed Cooler
Analyze all samples for Lead, Thion, Cribbs & Assoc	Jared Thion	9/28/18	07:45	Jared Thion	9/28/18	07:45				
PAOER NEW SHORTLY										
for UNLEADED GASOLINE	Jared Thion	9-28-18	10:40	Jared Thion	9/28/18	10:40	27	Y	Y	NY

SAMPLER NAME AND SIGNATURE				DATE SIGNED (MM/DD/YY)			
Jared Thion				9/27/18			
Jared Thion				9/27/18			

ORIGINAL

# Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Cribbs & Assoc

Project # 30266609

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other

Tracking #: NA

Label	<u>MDS</u>
LIMS Login	<u>PM</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☒ no

Thermometer Used 10 Type of Ice: Well Blue None

Cooler Temperature Observed Temp 2.6 °C Correction Factor: 10.1 °C Final Temp: 2.7 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>1004611</u>	<u>9/28/18 JLB</u>
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Hex Cr Aqueous Compliance/NPDES sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
All containers have been checked for preservation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
exceptions: <u>VOA, coliform, TOC, O&amp;G, Phenolics</u>				Initial when completed <u>PM</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Rad Aqueous Samples Screened > 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed:	Date:

## Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.