# REMEDIAL ACTION PLAN

# QUINN'S CAFE PROPERTY

224 MAIN STREET

ARCHBALD BOROUGH, LACKAWANNA COUNTY, PENNSYLVANIA

PADEP FACILITY ID #35-20617

USTIF CLAIM #2016-0136

PREPARED FOR

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PREPARED BY

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MAY 1, 2019

Submitted By: _____

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REMEDIAL ACTION PLAN

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ARCHBALD BOROUGH, LACKAWANNA COUNTY, PENNSYLVANIA

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## 1. BACKGROUND

### 1.1 General

LaBella Associates (LaBella), on behalf of DK & DK, LLC, is pleased to present this Remedial Action Plan (RAP) for the Quinn's Café property located at 224 Main Street in Archbald Borough, Lackawanna County, Pennsylvania. A Site Location Map (**Figure 1**) depicting the location of the subject property is included Appendix A. LaBella representative resumes are included as Appendix B. This document was prepared in accordance with the guidelines and standards pursuant to the Pennsylvania Department of Environmental Protection's (PADEP's) *"Land Recycling and Environmental Remediation Standards Act"* (Act 2) of July, 1995, as amended; the Corrective Action Process under the Pennsylvania Storage Tank and Spill Prevention Act (25 PA Code Chapter 245.301 – 245.313, Corrective Action Process); and the PADEP's Groundwater Monitoring Guidance Manual dated December 1, 2001.

### 1.2 Purpose of this Remedial Action Plan

On October 5, 2018, LaBella completed a Final Site Characterization Report (FSCR) summarizing the activities conducted at the subject property between October 17, 2016 and September 7, 2018. On March 6, 2019, the PADEP drafted a correspondence stating that the October 2018 FSCR was approved with the following modification(s) / stipulation(s):

- As noted on page 7-1 of the SCR, groundwater flow beneath the subject property is the southeast. Groundwater then assumes a northeasterly flow direction northeast of the subject property. This northeasterly flow is towards the Krenitsky residential property. Because of the mentioned groundwater flow toward the Krenitsky property, the Residential Used Aquifer Statewide Health Standard should be selected as the remediation standard for groundwater instead of the Non-Residential option.

According to the March 6, 2019 PADEP correspondence referenced above, a Remedial Action Plan (RAP) for the subject property is due no later than May 1, 2019. The purpose of this report is to summarize the results of the SVE / AS Pilot Test that was conducted at the subject property in February 2018 and to fulfill the May 1, 2019 RAP deadline included in the March 6, 2019 PADEP correspondence.

### 1.3 Site Location and Legal Description

The subject property is located at 224 Main Street in the Borough of Archbald, Lackawanna County, Pennsylvania. DK & DK, LLC currently owns the subject property. Refer to Appendix A for a Lackawanna County Tax Map (**Figure 2**) depicting the subject property. The subject property consists of one (1) distinct parcel of land, as summarized in Table 1-1:

**Table 1-1**
**Quinn's Café Stop Property**
**Summary of Parcel Information**

| Parcel Number | Lot Size | Deed Book / Page |
|---|---|---|
| 104.08-010-005 | 0.24 acres | 2006 / 08764 |

## 1.4 Site Description

The Quinn's Café Stop Property is located at 224 Main Street in the Borough of Archbald, Lackawanna County, Pennsylvania. The subject property is developed with one (1) convenience store building (~1,800 square feet), two (2) fuel dispenser canopies and five (5) associated UST systems situated on 0.24 (+/-) acres of land. The subject property maintains PADEP Facility ID #35-20617 in association with the current UST systems. The subject property is provided electricity by PPL; water service is provided by the Pennsylvania American Water Company; and, sewer service is provided by the Lackawanna River Basin Sewer Authority. The convenience store building is heated via natural gas provided by UGI. The average elevation of the subject property is 952 feet above mean sea level (M.S.L.), as indicated on the U.S.G.S. (7.5 Minute Series) Olyphant, Pennsylvania Quadrangle. Refer to Appendix A for a Site Sketch (**Figure 3**) and a Site Sketch with Aerial Overlay (**Figure 4**) depicting the subject property.

## 1.5 Storage Tank Investigation

The subject property currently maintains five (5) regulated UST systems. The subject property maintains PADEP Facility ID #35-20617 in association with these UST systems. The five (5) current USTs were installed between 1985 and 1989. Refer to Appendix A for a Site Sketch (**Figure 3**) depicting the current UST systems. According to PADEP records (www.depreportingsvcs.state.pa.us), the most recent Facility Operations Inspection (FOI) was conducted on September 9, 2016. The next FOI is due no later than September 9, 2019. A summary of the historical UST systems is provided in Table 1-2, as follows:

**Table 1-2**
**Quinn's Café Stop Property**
**Summary of Current UST Systems**

| Tank # | Capacity (gallons) | Product | Status |
|---|---|---|---|
| #001 | 10,000 | Gasoline | Currently-In-Use |
| #002 | 8,000 | Gasoline | Currently-In-Use |
| #003 | 4,000 | Gasoline | Currently-In-Use |
| #004 | 4,000 | Diesel Fuel | Currently-In-Use |
| #005 | 4,000 | Diesel Fuel | Currently-In-Use |

## 1.6 Site Physiography

### 1.6.1 Regional Bedrock Geology and Hydrogeology

The subject property, in the Borough of Archbald, Lackawanna County, Pennsylvania, is located in the Appalachian Mountain Section of the Valley and Ridge Physiographic Province. According to the Pennsylvania Geologic Survey (Berg 1980), the bedrock geology characteristic of the subject property is the Pennsylvania Age Llewellyn Formation. Refer to Appendix A for a Bedrock Geology Map (**Figure 5**).

Characteristic of the Llewellyn Formation are gray sandstones and shales containing numerous thick beds of anthracite coal (Geyer 1982). The coal beds are the most persistent units within the Llewellyn Formation. The intervening strata are characterized by extreme lateral changes in thickness and lithology. Throughout the Lackawanna Valley, the Llewellyn Formation has been extensively mined. The extensive mining in the area has resulted in poor groundwater quality due to the effects of acid mine drainage. As a result, groundwater from the Llewellyn Formation is not utilized as a source of potable water in the Lackawanna Valley. According to Hollowell (1975), regional groundwater is located at an approximate depth of 117 feet below grade at the study

area and is restricted to the series of mine pools which have resulted from the extensive mining of anthracite coal. The mine pool which extends from the Borough of Archbald south to the Borough of Old Forge is known as the Scranton Pool. The study area is located above the Scranton Pool. The groundwater in the Scranton Pool is restricted to a series of stair-stepped, interconnected basins separated by barrier pillars which restrict the flow of groundwater. The elevation of the groundwater surface in the portion of the Scranton Pool located beneath the study area is 835 feet above Mean Sea Level (M.S.L.). Refer to Appendix A for a Regional Water Table Map with Mining Features (**Figure 6**).

The absence of horizontally extensive stratigraphic units with the Llewellyn Formation generally results in the lack of appreciable saturated zones above the mine pools. Therefore, the existence of shallow, unconfined water tables throughout the Lackawanna Valley is on a location-by-location basis. These unconfined water tables exist primarily where there are sufficient unconsolidated formations, either glacial or alluvial, to accommodate a saturated zone. A shallow groundwater aquifer, located above the regional mine pool, was encountered at the subject property at an approximate depth of 5.0 feet below grade. This shallow aquifer was characterized as part of the activities conducted onsite by LaBella. The regional mine pool was not encountered and, therefore, not characterized as part of these activities.

### 1.6.2 Review of Surficial Geology

A review of Braun (2006) was completed to investigate the surficial site geology. However, Braun has the subject property located in an area identified as Urban land. No geologic detail is provided. Lands located in the immediate vicinity of the subject property are identified as being associated with Urban land and large areas of former strip mine (for coal) land. Refer to Appendix A for a Surficial Geology Map (**Figure 7**).

### 1.6.3 Site Soils Discussion

According to the *"Soil Survey of Lackawanna and Wyoming Counties, Pennsylvania"* (Eckenrode 1982), the soil type typical of the subject property is Urban land (Ur). Refer to Appendix A for a Soil Conservation Survey Map (**Figure 8**) depicting the subject property.

The Urban land association is a nearly level to moderately steep miscellaneous area which occurs on broad upland ridges. Slopes generally have been smoothed and range from 0 to 25 percent. Areas generally range from about 10 to more than 500 acres in size. The soil is so obscured by buildings, roads and other structures in areas of Urban land that identification of the natural soil is not practical. Most areas of this soil are on upland glacial till soils. Included in Urban land in mapping are small areas of Udorthents, strip mine and areas of Dumps, mine and Dumps and burned mine. Also included are small areas of Urban land, occasionally flooded. The soil properties of this map unit are highly variable because of the many kinds of soils in these areas and the amount of alteration during construction. Onsite investigation is necessary to determine soil properties and potentials of a particular area. No capability subclass or woodland ordination has been assigned to this map unit.

### 1.6.4 Surface and Subsurface Drainage Discussion

The subject property is located within the Susquehanna River Basin. As such, the surface water runoff and the groundwater baseflow generated at the property eventually discharges into the Susquehanna River. Refer to Appendix A for a Local Watershed Map (**Figure 9**).

A review of the general area surrounding the subject property indicates the closest surface water to the subject property is Charles Creek, located 170 feet to the northeast. Charles Creek has been redirected into the storm sewer system that flows to the northeast under Main Street. The storm sewer system eventually discharges to the Lackawanna River 0.4 miles east-northeast of the subject property. The Lackawanna River flows in a

southwesterly direction to its confluence with the Susquehanna River near the City of Pittston, Luzerne County, Pennsylvania. Please note: the presence of deep coal mining in the area has impacted the natural flow of groundwater in the vicinity of the subject property. As such, this stretch of the Lackawanna River is a losing stream and the groundwater present in the shallow aquifer below the site is believed to seep into the regional mine pool at elevation 835' MSL. This portion of the regional mine pool discharges into the Lackawanna River at the Gravity Slope Outfall, which is located ~0.9 miles to the southwest of the subject property. The Gravity Slope Outfall discharges up to 30 million gallons of water per day (www.lrca.org).

A review of the Special Protection Waters for Lackawanna County and Luzerne County, as listed in the Pennsylvania State Code Title 25 Chapter 93.9, indicates this stretch of the Lackawanna River is classified as a High Quality-Cold Water Fishery (HQ-CWF). This classification protects the listed waterways via the application of a variety of strict water quality standards.

### 1.6.5 Wetlands Discussion

Wetlands are defined in Pennsylvania State Code, Title 25 Chapter 105 Dam Safety and Waterway Management rules and regulations as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas. Similarly, the PADEP defines a watercourse as "a channel or conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow." (PA Code, Title 25 Environmental Protection, Chapter 105 Dam Safety and Waterway Management).

A National Wetlands Inventory (NWI) Map was reviewed as part of this investigation. NWI Maps are prepared by the U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services for the National Wetlands Inventory Program. Wetland areas are identified on the maps based upon the method specified in the Classification of Wetlands and Deep Water Habitats of the United States, Cowardin, et al, 1977. Due to the scale of NWI maps and inaccuracies inherent in the methods of their preparation, many small wetland areas are not mapped for any given NWI quadrangle. The wetland boundaries identified on the NWI maps are developed through aerial photographic interpretation. The NWI Map for this project (Dalton, PA 7.5-Minute Series Quadrangle) identifies the absence of wetland areas on the subject property. Refer to Appendix A for a National Wetlands Inventory Map (**Figure 10**) depicting the subject property.

## 1.7 Surrounding Land Use Investigation

An inspection of the areas surrounding the subject property was conducted in order to determine if any obvious signs of potential contamination were present. The subject property is located in a well-developed section of the Borough of Archbald, Lackawanna County, Pennsylvania. Refer to Appendix A for an Area Map (**Figure 11**). The surrounding land usage is as follows:

- **Northeast:** The subject property is bordered to the northeast by residential properties.
- **Southeast:** The subject property is bordered to the southeast by Main Street. Residential and commercial properties are located across Main Street.
- **Southwest:** The subject property is bordered to the southwest by Kennedy Drive. A United States Post Office and bank are located across Kennedy Drive.
- **Northwest:** The subject property is bordered to the northwest by commercial properties.

A review of the site history and an inspection of the areas located between the adjacent parcels and the subject property were conducted in order to determine if any obvious signs of potential contamination were present. No evidence of potential environmental impacts from surrounding properties was observed.

## 2. SITE CHARACTERIZATION ACTIVITIES SUMMARY

### 2.1 Release History

On September 9, 2016, Francis Smith & Sons, Incorporated (Francis Smith) completed a PADEP Facility Operations Inspection (FOI) at the subject property. During this inspection, the spill buckets on Tanks #001, #002, #003 and #004 were noted to be deteriorated. A Site Sketch (**Figure 3**) and Site Sketch with Aerial Overlay (**Figure 4**) depicting the USTs at the subject property are included in Appendix A. These spill buckets failed hydrostatic testing conducted during the inspection. In response, Francis Smith submitted a Notice of Reportable Release (NORR) form, dated September 9, 2016, to the PADEP Northeast Regional Office.

On September 12, 2016, Mr. Kevin Beers of the PADEP conducted an inspection of the subject property in response to the September 9, 2016 NORR. Mr. Beers prepared a Storage System Report Form Narrative which indicated further investigation as required. On October 17, 2016, Francis Smith was onsite replacing the spill buckets on Tanks #001, #002, #003 and #004. During this work, odor was observed in the backfill around the outsides of the spill buckets on Tanks #001, #002, #003 and #004. In response, Francis Smith submitted a Notice of Reportable Release (NORR) form, dated October 18, 2016, to the PADEP Northeast Regional Office.

During the October 17, 2016 spill bucket replacement activities, the property owner contracted Pennsylvania Tectonics (now LaBella) to complete soil sampling activities to confirm the presence or absence of contamination in the vicinity of the spill buckets. The results of the soil sampling activities confirmed the presence of soil contamination at concentrations exceeding the applicable Non-Residential, Used Aquifer (TDS <2,500 mg/l) Statewide Health Standard MSCs. These exceedances were associated with Tanks #001, #002 and #003. The PADEP drafted two (2) Notice of Violation (NOV) letters dated September 15, 2016 (associated with the spill bucket integrity test failure) and October 18, 2016 (in response to the October 18, 2016 NORR) indicating that site characterization activities must be completed to investigate the release.

### 2.2 Project Parameters

For the purpose of the site characterization activities completed to date, the parameters of concern were limited to a combination of the Unleaded Gasoline, Diesel Fuel / Fuel Oil #2 and Kerosene Parameters specified in the April 1, 1998 PADEP Technical Document: Closure Requirements for Underground Storage Tank Systems, as amended December 15, 2012. The list of the "Project Parameters" is as follows:

- Benzene
- Ethylbenzene
- Cumene
- Toluene
- MTBE
- Naphthalene
- Total Xylenes
- 1,2,4-TMB
- 1,3,5-TMB

### 2.3 Site Characterization Activities and Submittals

On October 5, 2018, LaBella completed a Final Site Characterization Report (FSCR) summarizing the activities conducted at the subject property between October 17, 2016 and September 7, 2018. On March 6, 2019, the PADEP drafted a correspondence stating that the October 2018 FSCR was approved with the following modification(s) / stipulation(s):

- As noted on page 7-1 of the SCR, groundwater flow beneath the subject property is the southeast. Groundwater then assumes a northeasterly flow direction northeast of the subject property. This northeasterly flow is towards the Krenitsky residential property. Because of the mentioned groundwater flow toward the Krenitsky property, the Residential Used Aquifer Statewide Health Standard should be selected as the remediation standard for groundwater instead of the Non-Residential option.

## 2.4 Results of Quarterly Groundwater Monitoring Activities

### 2.4.1 General

As indicated in the October 2018 Final Site Characterization Report, LaBella has continued groundwater monitoring activities on a quarterly basis. The most recent quarterly groundwater monitoring activities were conducted on January 29, 2019. The groundwater monitoring wells sampled as part of these activities are outlined in Table 2-1. Refer to Appendix A for the January 29, 2019 Groundwater Contour Map (**Figure 12**) that depicts the monitoring well locations.

**Table 2-1**
**Quinn's Café Stop Property**
**Groundwater Monitoring Well Locations**

| Well # | Location |
|---|---|
| MW-1 | Subject Property |
| MW-2 | Subject Property |
| MW-3 | Subject Property |
| MW-4 | Subject Property |
| MW-5 | Subject Property |
| MW-6 | Krenitsky Property |
| MW-7 | Fetcho Property |
| MW-8 | Fetcho Property |
| MW-9 | Chekan Property |
| MW-10 | NBT Bank Property |
| MW-11 | Krenitsky Property |
| MW-12 | Charles Street |
| MW-13 | Delaware Street |
| MP-2 | Subject Property |
| MP-3 | Subject Property |

### 2.4.2 Results of the January 2019 Sampling Activities

Positive concentrations of petroleum-related compounds were detected in nine (9) of the fifteen (15) groundwater samples collected as part of the January 2019 sampling event. The results of the groundwater sampling program indicate six (6) of the fifteen (15) groundwater samples express compound concentrations in excess of the respective Statewide Health Standard MSCs. The remaining contaminant concentrations are below the respective Statewide Health Standard MSCs for each compound analyzed. Historical groundwater analytical data summary tables are included in Appendix C. Isopleth maps depicting the distribution of contaminants as of January 2019 are included in Appendix D. Refer to Table 2-2 for a Summary of Groundwater Exceedances.

**Table 2-2**
**Quinn's Café Stop Property**
**Summary of Groundwater Exceedances (ug/l)**
**January 2019 Field Activities**

| Location | Parameter | Concentration | Act 2 MSC |
|---|---|---|---|
| MW-2 | Benzene | 41.0 ug/l | 5.0 ug/l |
| | Naphthalene | 135.0 ug/l | 100.0 ug/l |
| | 1,2,4-TMB | 35.8 ug/l | 15.0 ug/l |
| | | | |
| MW-3 | Benzene | 80.3 ug/l | 5.0 ug/l |
| | 1,2,4-TMB | 22.8 ug/l | 15.0 ug/l |
| | | | |
| MW-4 | Benzene | 63.9 ug/l | 5.0 ug/l |
| | MTBE | 199.0 ug/l | 20.0 ug/l |
| | | | |
| MW-5 | Benzene | 66.9 ug/l | 5.0 ug/l |
| | Naphthalene | 122.0 ug/l | 100.0 ug/l |
| | 1,2,4-TMB | 407.0 ug/l | 15.0 ug/l |
| | | | |
| MP-2 | Benzene | 353.0 ug/l | 5.0 ug/l |
| | MTBE | 446.0 ug/l | 20.0 ug/l |
| | Naphthalene | 120.0 ug/l | 100.0 ug/l |
| | 1,2,4-TMB | 298.0 ug/l | 15.0 ug/l |
| | | | |
| MP-2 | Benzene | 533.0 ug/l | 5.0 ug/l |
| | MTBE | 156.0 ug/l | 20.0 ug/l |
| | Naphthalene | 125.0 ug/l | 100.0 ug/l |
| | 1,2,4-TMB | 239.0 ug/l | 15.0 ug/l |

2.4.3 Temporal Trend Analysis

Time-series graphs were prepared for each compound that exceeded the respective MSCs within the last four (4) groundwater sampling events. These graphs are included in Appendix E. A linear regression best-fit trend line was fit to the time-series data on each graph using the trend line function in MS Excel. Refer to Table 2-3 for a summary of the trends that have been identified based on a review of the time-series graphs:

**Table 2-3**
**Quinn's Café Stop Property**
**Groundwater Analytical Data – Trend Summary**

| Well # | Compound | Trend | Concentration |
|---|---|---|---|
| MW-2 | Benzene | Decreasing | Above MSC |
| | Naphthalene | Decreasing | Above MSC |
| | 1,2,4-TMB | Decreasing | Above MSC |

**Table 2-3 (cont.)**
**Quinn's Café Stop Property**
**Groundwater Analytical Data – Trend Summary**

| Well # | Compound | Trend | Concentration |
|---|---|---|---|
| MW-3 | Benzene | Decreasing | Above MSC |
| | Ethylbenzene | Increasing | Below MSC |
| | MTBE | Decreasing | Below MSC |
| | Naphthalene | Decreasing | Below MSC |
| | 1,2,4-TMB | Decreasing | Above MSC |
| | | | |
| MW-4 | Benzene | Decreasing | Above MSC |
| | MTBE | Decreasing | Above MSC |
| | | | |
| MW-5 | Benzene | Decreasing | Above MSC |
| | Ethylbenzene | Decreasing | Below MSC |
| | Naphthalene | Decreasing | Above MSC |
| | 1,2,4-TMB | Decreasing | Above MSC |
| | | | |
| MW-6 | Benzene | Decreasing | Below MSC |
| | MTBE | Decreasing | Below MSC |

## 2.5 Review of Soil Investigation Activities

Between October 17, 2016 and August 23, 2018, LaBella collected a total of eighty (80) soil samples from test borings, monitoring wells and excavations at the subject property and surrounding properties. Refer to Appendix F for tables summarizing the soil analytical data. The results of this investigation have yielded the following:

- Vadose Zone: Vadose Zone Samples: A total of thirty-nine (39) soil samples were collected from the Vadose Zone, which includes the permanently unsaturated zone and the capillary fringe. The MSCs associated with unsaturated conditions are the applicable standards to be used for comparison. Refer to Appendix A for a Contamination Distribution Map depicting the vadose zone contamination (**Figure 13**).

- Smear Zone: A total of forty (40) soil samples were collected from the Smear Zone. The PADEP defines the Zone of Groundwater Saturation as the soil that is below the seasonal high water level. LaBella further bisected the Zone of Groundwater Saturation into the Smear Zone and the Permanently Saturated Zone. The Smear Zone is not saturated at all times and is subject to seasonal fluctuations in the groundwater table. The determination of the vertical limits of the Smear Zone was made via the review of historic groundwater elevation data. The MSCs associated with saturated conditions are the applicable standards to be used for comparison. Refer to Appendix A for a Contamination Distribution Map depicting the smear zone contamination (**Figure 14**).

- Permanently Saturated Zone: One (1) soil sample was collected from the Permanently Saturated Soil, defined as the soil that is saturated on a continuous basis. The determination of the vertical limits of this zone was made via the review of historical groundwater elevation data. Contamination present in the Permanently Saturated Zone is considered a groundwater issue and not a soil issue. Therefore, no soil MSCs apply.

- Associated soil cross sections are also included in Appendix A as **Figure 15** (Cross Section ID Map), **Figure 16** (Cross Section A-A') and **Figure 17** (Cross Section B-B').

A review of the soil data generated via the site characterization activities has identified Vadose Zone and Smear Zone soil contamination at the subject property.

## 2.6 Review of Vapor Intrusion Evaluation

LaBella completed a Vapor Intrusion Evaluation as part of site characterization activities. These activities included the collection of two (2) rounds of sub-slab vapor samples from beneath the subject property building and adjacent Krenitsky property building. Two (2) sub-slab vapor samples were collected from beneath the property building and Krenitsky property during each round of sub-slab sampling. The results of the vapor intrusion evaluation indicate there is no potentially complete Soil-Vapor Exposure Pathways or Groundwater-Vapor Exposure Pathways at the subject property or adjacent Krenitsky property.

## 2.7 Comparison of Potential Remedial Technologies

### 2.7.1 General

The following sections provide a summary of the remedial alternatives considered to lower the concentrations of target compounds in the smear zone soil and groundwater to demonstrate attainment of the Statewide Health Standard at the subject property.

### 2.7.2 Monitored Natural Attenuation

Natural subsurface processes such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials are allowed to reduce contaminant concentrations to acceptable levels. Monitored natural attenuation (MNA) is not a "technology" per se, and there is significant debate among technical experts about its use at hazardous waste sites. Consideration of this option usually requires modeling and evaluation of contaminant degradation rates and pathways and predicting contaminant concentration at downgradient receptor points, especially when the plume is still expanding / migrating. The primary objective of site modeling is to demonstrate that natural processes of contaminant degradation will reduce contaminant concentrations below regulatory standards or risk-based levels before potential exposure pathways are completed. In addition, long-term monitoring must be conducted throughout the process to confirm that degradation is proceeding at rates consistent with meeting cleanup objectives.

Compared with other remediation technologies, MNA has the following advantages:

- Less generation or transfer of remediation wastes;
- Less intrusive as few surface structures are required;
- May be applied to all or part of a given site, depending on site conditions and cleanup objectives;
- MNA may be used in conjunction with, or as a follow-up to, other (active) remedial measures; and
- Overall cost will likely be lower than active remediation.

Limitations include:

- Data used as input parameters for modeling need to be collected;
- MNA is not appropriate where imminent site risks are present. For example, it will not immediately address the migration of contaminants beyond the POC;

- Contaminants may migrate before they are degraded;
- Institutional controls may be required, which may not be desirable to the property owner or the owners of adjacent properties;
- Long-term monitoring and associated costs;
- Longer time frames may be required to achieve remediation objectives, compared to active remediation;
- The hydrologic and geochemical conditions amenable to natural attenuation may change over time and could result in renewed mobility of previously stabilized contaminants and may adversely impact remedial effectiveness.

The suitability of MNA is low since groundwater contamination has already migrated near the POC.

### 2.7.3 Excavation or Excavation Coupled with Groundwater Remediation

Excavation of contaminated soil is an ex-situ technology that includes excavating contaminated soils with offsite disposal or treatment at a properly permitted facility. In some instances (usually with larger quantities of contaminated soil), the excavated material is treated onsite. The area of excavation is determined via review of soil analytical data generated during site characterization activities, in conjunction with field screening performed during the actual excavation process. Soil samples, collected in accordance with PADEP guidelines and regulations, are collected for laboratory analysis after completing excavation activities. Soil sample analytical results are used to demonstrate attainment of the selected Act 2 cleanup standard. The excavation process would remediate the soils in the Vadose Zone and the Smear Zone (i.e. the periodically saturated soils located above the Permanent Zone of Saturation). The open cavity would allow for pumping of any impacted groundwater or the application of a remedial solution such as bioremediation solutions, oxygen releasing compounds (ORC), or In-Situ Chemical Oxidation (ISCO). Removal of the contaminated soils would also eliminate contaminant source material, thereby reducing groundwater contamination over time. Removal of contaminated soils would also eliminate potentially complete soil-vapor exposure pathway, if present.

Compared with other remediation technologies, soil excavation coupled with groundwater remediation has the following advantages:

- Low construction costs as compared to other technologies;
- Soil contamination is removed rapidly and attainment is demonstrated in a short period of time in the form of laboratory analytical results;
- No need to complete an additional test boring program to verify the success of the remediation;
- No engineering costs, capital costs, or operation and maintenance costs;
- Site disruption limited depending the extent of the work;
- May be applied to all or part of a given site, depending on site conditions and cleanup objectives;
- Will result in soil remediation without using other active remedial technologies.

Limitations include:

- Not applicable to larger sites where in-situ remediation of soil and / or groundwater become more cost effective;
- May not immediately remediate groundwater to levels below the desired Act 2 cleanup standards;
- Disruption of contaminated soils and groundwater may result in limited migration of groundwater contamination away from the source.

- Due to the degree and distribution of groundwater contamination identified, the application of remedial solutions into an excavation cavity would not be sufficient to address the entire groundwater contamination issue.

The suitability of this remedial alternative is low due to site features limiting soil excavation (i.e. USTs and buried utilities). In addition, this remedial alternative alone would not address contaminated groundwater.

### 2.7.4 Soil Vapor Extraction

Soil vapor extraction (SVE) is an in-situ vadose zone and smear zone soil remediation technology in which a vacuum is applied to the soil to induce the controlled flow of air and remove volatile and some semi-volatile contaminants from the soil. The gas leaving the soil may be treated to recover or destroy the contaminants, depending on local and state air discharge regulations. Vertical extraction vents are typically used at depths of 1.5 meters (5 feet) or greater and have been successfully applied as deep as 91 meters (300 feet). Horizontal extraction vents (installed in trenches or horizontal borings) can be used as warranted by contaminant zone geometry, drill rig access, or other site-specific factors.

Compared with other remediation technologies, SVE has the following advantages:

- In-situ remediation, therefore less generation or transfer of remediation wastes (although vapors need to be remediated before discharge to the atmosphere);
- Once the system is installed, little to no disruption of day-to-day site operations;
- May be applied to all or part of a given site, depending on site conditions and cleanup objectives;
- May be used in conjunction with, or as a follow-up to, other remedial measures such as MNA, and;
- May result in the remediation of the shallow groundwater without the use of other active technologies.

Limitations include:

- May not completely remediate the shallow groundwater resulting in the need for additional groundwater remediation activities or a site-specific closure on the groundwater, which is not desired;
- Engineering costs, construction costs, capital costs, and operation and maintenance (O&M) costs are generally high;
- Due to the relatively small groundwater contaminant plume at the subject property, the high engineering costs, construction costs, capital costs and O&M costs may result in a high unit cost for remediation;
- Need to complete additional test boring program to verify the success of the remediation in soil;
- Longer time frames to achieve remediation objectives for soil, as compared to the excavation option.

The suitability of this technology is moderate since SVE alone may be adequate to remediate the contaminated groundwater present at the site due to the very shallow depth to the aquifer.

### 2.7.5 Air Sparging Coupled with Soil Vapor Extraction

Air sparging (AS), which would involve the injection of air to expedite the volatilization of the contaminants, is often associated with soil vapor extraction. In general, the SVE system is designed as indicated above. The AS points would be installed into the shallow groundwater table, resulting in the injection of air and remediation of the shallow groundwater contamination in concert with the soil contamination.

Compared with other remediation technologies, AS coupled with SVE has the following advantages:

- In-situ remediation, therefore less generation or transfer of remediation wastes (although vapors need to be remediated before discharge to the atmosphere);
- Once the system is installed, little to no disruption of day-to-day site operations;
- May be applied to all or part of a given site, depending on site conditions and cleanup objectives;

Limitations include:

- May not completely remediate the shallow groundwater resulting the need for additional groundwater remediation activities or a site-specific closure on the groundwater, which is not desired;
- Engineering costs, construction costs, capital costs and operation and maintenance (O&M) costs are generally high;
- Due to the relatively small groundwater contaminant plume at the subject property, the relatively high engineering costs, construction costs, capital costs and O&M costs will result in a high unit cost for remediation;
- Longer time frames to achieve remediation objectives, as compared to the excavation option.

The suitability of SVE/AS to address soil and groundwater contamination at the subject property is moderate to high. This technology would address both the soil and groundwater contamination concurrently. In addition, the operation of this system would be feasible despite the presence of physical restrictions such as the gasoline USTs, product lines, and dispensers, which may limit or prohibit the use of other technologies such as ISCO and soil excavation. LaBella completed an SVE / AS Pilot Test at the subject property in February 2019. The results of the SVE / AS Pilot Test are included in Section 3 of this RAP.

### 2.7.6 Groundwater Pump and Treat

Aboveground treatment of groundwater is generally accomplished by bringing groundwater to the surface where it can be treated (i.e., pump and treat). The groundwater is then either disposed or discharged into the subsurface. Prior to discharge into the subsurface, groundwater must be run through an activated carbon treatment system or air stripper capable of removing petroleum compounds to non-detect levels.

In addition, remediation by pump and treat is a slow process and cleanup times are often very long. System design, such as pumping rate, is one factor to consider when estimating cleanup times. A system pumping at very low rates may have a very long predicted cleanup time, while one operating at higher rates may have a shorter predicted cleanup time. Also, estimating the cleanup time is difficult and is subject to a large number of uncertainties; typical methods used to calculate cleanup time often result in underestimates because they neglect processes that can add years to the cleanup.

Groundwater pump and treat is generally not suited to geological formations with moderate to low permeability. In general, groundwater pump and treat is generally an inefficient method of groundwater remediation and today is used more as a means to hydraulically control the migration of the contaminant plume as opposed to serving as a primary means of remediation. Therefore, the suitability of groundwater pump and treat as a remedial option is low at the subject property.

### 2.7.7 Chemical Oxidation

Chemical oxidation involves free radical generation and direct oxidation of contaminants. The contaminants are treated in-situ and are converted to innocuous and/or naturally occurring compounds (i.e. $H_2O$, $CO_2$, $O_2$, halide ions). As a side benefit, aerobic biodegradation of contaminants can benefit from the increase in dissolved oxygen (DO) released through peroxide degradation. Oxidation of contaminants involves a variety of competing reactions as follows (where RH is the contaminant of concern):

$$H_2O_2 + OH\bullet \rightarrow H_2O + HO_2\bullet$$
$$RH + OH\bullet \rightarrow H_2O + R\bullet$$

Typically, a 5% hydrogen peroxide solution would effectively reduce the contaminant concentrations to levels below the Act 2 non-residential used aquifer SHS. ISCO involves addition of chemical reagents into groundwater via injection wells. The reagents attack the petroleum contamination by chemical oxidation, which breaks the organic compounds down into smaller molecules that are innocuous in nature. The reagents may be hydrogen peroxide or permanganate, which are effective oxidizing agents. The oxidation process is fast acting, taking several days to a few weeks. The contaminants are treated in situ and are converted to innocuous and/or naturally occurring compounds (i.e. $H_2O$, $CO_2$, $O_2$, halide ions).

The effectiveness of ISCO may be limited by low soil permeability, subsurface heterogeneities, and highly alkaline soils where carbonate ions are free radical scavengers. Low soil permeability may be overcome by hydraulic fracturing of the subsurface geology or an increase in injection point density. The reagent may also be consumed by natural organic matter or by reduced inorganics before effectively treating the contamination of concern. To perform chemical oxidation, a pH between 2 and 4 is preferable, but not necessary. If necessary, the pH of the groundwater may be lowered by using acetic acid to achieve the desired range.

The potential side effects of ISCO remediation include evolution of gas, increase in temperature, re-solubilization of reduced metals, and reduction in biomass. Due to a possible increase in pressure, there is a potential for an explosion if the peroxide is added at a concentration greater than 10% by weight. Since there are active gasoline USTs at the site, the risks associated with the evolution of gas and increased temperature are unacceptable. Therefore, ISCO is not a suitable technology for subject property.

### 2.7.8 Enhanced Aerobic Biodegradation - Injection of Oxygen Release Compounds (ORC)

Via the collection of in-situ groundwater data (i.e. DO and ORP), as well as the analysis of intrinsic parameters such as Manganese, Ferrous Iron, Nitrate and Sulfate, LaBella has demonstrated that natural aerobic and anaerobic biodegradation is occurring at the subject property. Aerobic biodegradation will dominate until such time that DO levels are reduced, at which point anaerobic degradation takes over. Enhanced aerobic biodegradation is the practice of adding oxygen (an electron acceptor) to groundwater and/or soil to increase the number and vitality of indigenous microorganisms performing biodegradation. Regenesis of San Clemente, California has developed a proprietary calcium oxy-hydroxide based material, ORC-Advanced™, which releases up to 17% of its weight as molecular oxygen. This release of oxygen is used to accelerate naturally occurring in-situ bioremediation of petroleum hydrocarbons, and certain fuel oxygenates such as MTBE, by indigenous microorganisms in the subsurface. This use of this remedial technique is advantageous for the following reasons:

- Low capital costs when compared to other remedial alternatives since there are no large scale capital equipment costs, no engineering costs and no O&M costs.

- There are no costs associated with completion of bench-scale or pilot-scale testing, nor are any costs associated with the evaluation of system performance such as with groundwater extraction wells or vapor extraction systems.

- Site disruption is minimal. The ORC Advanced™ injection points can be completed within one (1) week, with the release of oxygen occurring over a 9- to 12-month period.

- The use of ORC Advanced™ and enhanced bioremediation has a proven track record in the remediation of hydrocarbon-based contamination.

- There are no ongoing waste streams associated with the use of ORC Advanced™, thereby reducing overall project costs.

- There are no limiting factors associated with the use of ORC Advanced™ in proximity to USTs, product feed lines or dispensers.

The suitability of this technology is low since enhanced aerobic biodegradation alone will not remediate the contaminated soil in the vadose zone at the subject property

### 2.7.9 Oxygen Injection

The injection of pure oxygen into groundwater using oxygen generators is a patented groundwater remediation process (U.S. Patent No. 5,874,001) developed by Matrix Environmental Technologies, Inc. (Matrix). It is a proven remediation technique for sites in which physical remediation processes (such as air sparging) are no longer effective or efficient, thus a biological process is more favorable. Oxygen injection rapidly enhances the biodegradation of organic contaminants such as petroleum hydrocarbons and most chlorinated solvents biodegradable under aerobic conditions. The system produces 95% oxygen, which is injected at flow rates and pressures to achieve breakout only. The primary mechanisms of oxygen transport are advection and dispersion, the same mechanisms that facilitated contaminant migration. The dissolution of nearly pure oxygen at a controlled rate has resulted in measured DO concentrations up to 40 mg/L. Oxygen injection is suitable for shallow groundwater conditions since there is no generation of hazardous vapors eliminating the need for vapor control. Biodegradation of MTBE and TBA, fuel additives that degrade slowly or not at all under anaerobic conditions, has been optimized at many sites.

Oxygen injection provides a very efficient process to stimulate the aerobic biodegradation of groundwater contaminants and may be applicable to the site. In addition, the use of oxygen injection will not adversely impact the groundwater or nearby surface water. The suitability of this technology is low since Oxygen Injection alone will not remediate the contaminated soil in the vadose zone at the subject property.

## 2.8 Chosen Remedial Alternative for Soil & Groundwater

Based on the comparison of potential remedial technologies, Labella and the project stakeholders have chosen SVE / AS as the optimal remedial approach to address the soil and groundwater contamination present at the subject property. To evaluate the viability SVE/AS as a suitable remedial technology, LaBella completed a pilot test at the subject property in February 2019. The results of the pilot test are presented in Section 3 of this RAP.

## 3. COMPLETION OF THE SVE/AS PILOT TEST

### 3.1 General

As indicated above, SVE / AS was identified as the only potentially viable remedial technology at the subject property. Based on conversations with the project stakeholders, it was determined that a pilot test was required to evaluate the viability of SVE/AS at the subject property. On November 5, 2018, LaBella prepared a Draft Work Plan to complete a combined SVE/AS pilot test at the Quinn's Café Stop Property. The objective of pilot testing was to evaluate the feasibility of SVE/AS as an *in-situ* remedial option, targeting the portions of the site where VOC-impacted soil (i.e. smear zone soils) and/or groundwater are above the applicable Residential, Used Aquifer (TDS <2,500 mg/l) Statewide Health Standards.

### 3.2 Installation of Pilot Test Extraction, Injection & Monitoring Points

Between January 14, 2019 and January 15, 2019, LaBella completed field activities associated with the installation of two (2) SVE extraction wells, three (3) SVE monitoring points and one (1) air sparge point at the subject property. Drilling services were provided by Odyssey Environmental of Harrisburg, Pennsylvania. The work was completed for the planned SVE/AS pilot test. Refer to Appendix A for a Pilot Test Point Location Map (**Figure 18**) depicting the locations of these points.

Prior to the initiation of the drilling activities, each proposed drilling location was cleared via air-knife excavation (i.e. soft dig) technology. Each test point was subsequently completed utilizing a combination of hollow stem auger and air rotary drilling techniques. Each test point was constructed by lowering PVC screen and PVC riser into the borehole. A sand pack consisting of #00N silica sand was placed within the screened interval. A bentonite seal, consisting of hydrated bentonite pellets, was placed above the sand pack. Each point was completed with a flush grade manway with locking inner cap. Refer to Appendix G for copies of the Test Boring Logs associated with the test point installations and to Appendix H for the Well Construction Details. A Photograph Log compiled as part of the field activities is presented in Appendix I. A summary of the well construction information is included in Table 3-1, as follows:

**Table 3-1**
**Quinn's Café Stop Property**
**Summary of Pilot Test Point Construction Details**

| Well ID | Diameter | Screen Size | Screen Interval | Sand Size | Sand Interval |
|---|---|---|---|---|---|
| MP-1 | 2" | 0.010 Slot | 2.5' – 5.5' | #00N | 2.0' – 5.5' |
| MP-2 | 2" | 0.010 Slot | 3.0' – 10.0' | #00N | 2.0' – 10.0' |
| MP-3 | 2" | 0.010 Slot | 3.0' – 10.0' | #00N | 2.0' – 10.0' |
| SVE-1 | 2" | 0.010 Slot | 2.5' – 5.5' | #00N | 5.5' – 11.0' |
| SVE-2 | 2" | 0.010 Slot | 2.5' – 5.5' | #00N | 5.5' – 11.0' |
| AS-1 | 1" | 0.010 Slot | 9.0' – 10.0' | #00N | 8.0' – 10.5' |

(*) AS-1 constructed with a 0.5' solid silt sump below the screened interval.

The pilot test was designed to address the soil and groundwater contamination identified at the subject property. The test points were located as follows:

- Soil vapor extraction point SVE-1 was located between the Tank #002 / Tank #003 and the property building. This point was installed to determine the feasibility of SVE / AS to address the vadose zone soil contamination in the vicinity of the spill buckets at Tank #002 / Tank #003 and the groundwater contamination identified in MW-2.

- Soil vapor monitoring point MP-1 was completed in the vicinity of SVE-1 to document the influence of SVE-1 during the pilot test.

- Soil vapor extraction point SVE-2 was located in the center of documented groundwater plume. This point was installed to determine the feasibility of SVE / AS to address the groundwater contamination identified in MW-3.

- Soil vapor monitoring points MP-2 and MP-3 was completed in the vicinity of SVE-2 to document the influence of SVE-2 during the pilot test. These points were completed into the zone of saturation. As such, these points can also be utilized to monitor the groundwater.

- Air sparge point AS-1 was completed in the vicinity of SVE-2 to be used as part of the air sparge portion of the pilot test.

Three (3) of the pilot test points (MP-2, MP-3 and AS-1) were completed into the zone of saturation. The scope of work associated with the completion of the test point development activities, conducted by LaBella, included the development of these three (3) test points utilizing hand-bailing and surge block methods. The goal of well development activities was to remove a minimum of ten (10) well volumes from each point. In accordance with the provisions of the PADEP's *Groundwater Monitoring Guidance Manual* (December 1, 2001 edition), drill cuttings and groundwater effluent generated during the pilot test activities were containerized onsite pending transportation and disposal considerations.

## 3.3 Completion of SVE/AS Pilot Test

### 3.3.1 General

In accordance with the Draft Work Plan dated November 5, 2018, LaBella completed an SVE / AS Pilot Test at the subject property between February 27, 2019 and February 28, 2019. The purpose for the testing was to evaluate soil vapor extraction (SVE) and air sparging (AS) as remedial options to address the soil and groundwater contamination at the subject property.

### 3.3.2 Baseline Monitoring

Prior to initiating the pilot test, baseline data monitoring was performed which included collecting readings from each of the Soil Vapor Extraction locations (designated SVE-1 and SVE-2), the newly installed Monitoring Points (designated MP-1 through MP-3), the Air Sparge location (designated AS-1) and existing accessible monitoring wells (MW-1 through MW-6). The baseline monitoring included measuring dissolved oxygen (DO), vacuum, water levels and Photoionization Detector (PID) readings. The baseline data is tabulated and presented as Table J-1 in Appendix J.

### 3.3.3 Completion of Soil Vapor Extraction Testing

The soil vapor extraction system pilot test was operated to assess air flow rates achieved and approximate removal rates for VOCs. The pilot test consisted of operating for approximately 60 minutes at three (3) different set points. The data collected during the soil vapor extraction pilot test are tabulated and presented as Table J-2 in Appendix J. The pilot test activities and results are summarized below:

- The first step was conducted between 1220 and 1325. During this time the SVE system was operated at a vacuum of 2-inches of mercury and an air flow rate of 125 cubic feet per minute (CFM). It was noted that a significant volume of the air was from SVE-2 which was located

in the center of the documented groundwater plume. Air flow at SVE-1 and SVE-2 were recorded at 2.00 SCFM and 24.52 CFM, respectively (note the residual CFM is makeup air). During this phase of the pilot test, notable influence (based on vacuum readings) was observed in MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14.0' from SVE-2), MW-2 (5.5' from SVE-1), MW-3 (10.0' from SVE-2) and MW-4 (36.0' from SVE-2). The PID reading from SVE-1 was 12.7 ppm and the PID reading from SVE-2 was 64.5 ppm.

- During the second step (1325 to 1425), the vacuum was increased to 2.8-inches of mercury and 132 CFM. It was noted that a significant volume of the air was from SVE-2 which was located in the center of the documented groundwater plume. Air flow at SVE-1 and SVE-2 was recorded at 2.11 CFM and 33.50 CFM, respectively (note the residual CFM is makeup air). Notable influence (based on vacuum readings) was observed in MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14.0' from SVE-2), MW-2 (5.5' from SVE-1), MW-3 (10.0' from SVE-2) and MW-4 (36.0' from SVE-2). The PID reading from SVE-1 was 20.4 ppm and the PID reading from SVE-2 was 114.2 ppm.

- During the third step (1425 to 1550), the vacuum was increased to 3.0-inches of mercury and 150 CFM. It was noted that a significant volume of the air was from SVE-2 which was located in the center of the documented groundwater plume. Air flow at SVE-1 and SVE-2 was recorded at 3.24 CFM and 37.90 CFM, respectively (note the residual CFM is makeup air). Notable influence (based on vacuum readings) was observed in MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14.0 feet from SVE-2), MW-2 (5.5 feet from SVE-1), MW-3 (10.0 feet from SVE-2) and MW-4 (36.0 feet from SVE-2). The PID reading from SVE-1 was 30.5 ppm and the PID reading from SVE-2 was 122.6 ppm. Two (2) vapor samples were collected at the end of the Soil Vapor Extraction Pilot Test for laboratory analysis. One (1) influent vapor sample was collected from SVE-1 and one (1) influent vapor sample was collected from SVE-2.

### 3.3.4 Completion of Air Sparge Testing

The air sparge system pilot test was operated to evaluate air injection pressures, flow rates, and approximate additional removal rates for VOCs (i.e. beyond the SVE only). The air sparge pilot test was conducted on February 28, 2019 and consisted of operating for a minimum of 60 minutes at three (3) different set points. During the air sparge pilot test, readings were recorded at monitoring points MP-1 through MP-3 and monitoring wells MW-1 through MW-6. Air sparge pilot test results are presented in Table J-3 in Appendix J and summarized below.

- The first step of the air sparge pilot test was conducted between 0830 and 0930. Initially, the air sparge system operated at a pressure of 9.5 psi and an air flow of 1.34 CFM with the SVE system operating at 2 inches of mercury and an air flow rate of 125 CFM. PID readings of 14.9 ppm and 127.8 ppm were recorded at SVE-1 and SVE-2, respectively. During this phase of the test, measurable vacuum was recorded at MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14 feet from SVE-2), MW-3 (10 feet from SVE-2), and MW-4 (36 feet from SVE-2). In addition, the air flow at SVE-1 and SVE-2 was measured at 2.08 SCFM and 22.70 SCFM, respectively, which are similar readings to those recorded during the SVE only pilot test.

- During the second step (0930 to 1045), the air sparge system maintained a pressure at 9.5 psi and air flow of 1.10 CFM with the SVE system operated at 2.8 inches of mercury and an air

flow rate of 135 CFM. PID readings of 16.9 ppm and 90.5 ppm were recorded at SVE-1 and SVE-2, respectively. Measurable vacuum was recorded at MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14 feet from SVE-2), MW-2 (5.5' from SVE-1), MW-3 (10 feet from SVE-2) and MW-4 (36 feet from SVE-2). Air flow was unchanged at SVE-1 (2.08 CFM), but increased at SVE-2 (30.33 CFM).

- The final step of the air sparge pilot test was conducted between 1045 and 1210. During the final step of the pilot test, the air sparge system maintained a pressure at 9.5 psi and 0.83 CFM while the SVE system operated at 3.0 inches of mercury and an air flow rate of 150 CFM. PID readings of 11.7 ppm and 105.7 ppm were recorded at SVE-1 and SVE-2, respectively. During the final phase of the air sparge pilot test, measureable vacuum was recorded at MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14 feet from SVE-2), MW-2 (5.5 feet from SVE-1), MW-3 (10 feet from SVE-2) and MW-4 (36 feet from SVE-2). Air flow at SVE-1 and SVE-2 increased to 5.24 SCFM and 38.14 SCFM, respectively. Two (2) vapor samples were collected at the end of Air Sparge Pilot Test for laboratory analysis. One (1) influent vapor sample was collected from SVE-1 and one (1) influent vapor sample was collected from SVE-2.

### 3.3.5 Influent Vapor Sampling and Analysis

LaBella collected two (2) influent vapor samples each following completion of the SVE and AS pilot tests. Following collection, the four (4) influent vapor samples were submitted to Centek Laboratories, LLC of Syracuse, New York for laboratory analysis of the TO-15 PADEP short list of Unleaded Gasoline and Diesel Fuel Parameters.

Refer to Appendix K for copies of influent vapor data sheets that document the February 27-28, 2019 sampling event. Table 3-2 details influent vapor concentrations reported in the four influent vapor samples.

**Table 3-2**
**Quinn's Café Property**
**Vapor Influent Concentrations**

| Parameter | SVE-1 Influent ($ug/m^3$) | SVE-2 Influent ($ug/m^3$) | AS SVE-1 Influent ($ug/m^3$) | AS SVE-2 Influent ($ug/m^3$) |
|---|---|---|---|---|
| 1,2,4-TMB | 78 | <250 | 68 | 160 |
| 1,3,5-TMB | 240 | 81 | 130 | 210 |
| Benzene | 340 | 2,400 | 130 | 2,000 |
| Cumene | 96 | 370 | 74 | 390 |
| Ethylbenzene | 1,100 | 810 | 960 | 1,300 |
| m&p-Xylene | 5,400 | 3,900 | 4,500 | 7,100 |
| MTBE | <180 | <180 | <180 | <180 |
| Naphthalene | <260 | <260 | <260 | <7.9 |
| o-Xylene | 2,800 | 950 | 2,200 | 2,200 |
| Toluene | 1,900 | 15,000 | 940 | 14,000 |
| **Totals** | **11,954** | **23,511** | **9,002** | **27,360** |

Note: Total influent vapor concentrations do not include parameters not detected above listed laboratory detection limits.

### 3.3.6 Post SVE / AS Pilot Test Data

Following completion of the final AS pilot test step, LaBella collected water level, PID, temperature, DO, and vacuum readings from SVE extraction points SVE-1 and SVE-2, monitoring points MP-1 through MP-3, air sparge point AS-1 and monitoring wells MW-1 through MW-6 to compare with baseline monitoring data collected prior to the SVE / AS pilot test. Post SVE / AS pilot test data is summarized in Table J-4 in Appendix J and summarized below:

- In comparison with baseline data, DO concentrations increased in AS-1 and MW-4, but decreased at the other pilot test locations.

- DTW levels increased at SVE-1 and AS-1 indicating mounding of the groundwater water table at these locations following completion of pilot test. At the remaining pilot test locations, groundwater levels increased by an average of 0.083 feet.

- Following completion of pilot testing, PID screening results reported increases in total VOC vapors at SVE-1, MP-1, MP-3, AS-1, MW-2, and MW-5. The highest PID screening results were recorded at AS-1 (202.5 ppm). A PID reading of 2.2 ppm was recorded at AS-1 during baseline monitoring.

### 3.3.7 Summary of Findings

The following summarizes the findings of the SVE/AS Pilot Test:

- The vertical SVE system points identified adequate influence for monitoring locations within approximately 10 feet of SVE-1 and 36 feet of SVE-2. Notable vacuum influences were recorded at MP-1 (10 feet from SVE-1), MP-2 (5 feet from SVE-2), MP-3 (14 feet from SVE-2), MW-2 (5.5 feet from SVE-1), MW-3 (10 feet from SVE-2) and MW-4 (36 feet from SVE-2). The SVE portion of the pilot test exhibited good influence at SVE-2. This is documented through the air flow rate that was extracted from this point and influence observed in monitoring point MP-2 (-1.3" to - 2.4" water column (WC) at 5 feet); MP-3 (-0.86" to -1.5" WC at 14 feet); MW-3 (-0.031" to -0.14"WC at 10 feet), and MW-4 (-0.16" to -0.34" WC at 36 feet). These values were used to assess the radius of influence (ROI). However, due to the limited influence in SVE-1 (< -0.1" WC in MW-2 and MP-1), there is concern that heterogeneous and tight subsurface conditions limit the SVE extraction ROI in some vertical points. As such, LaBella recommends installing a horizontal SVE system to minimize the potential for limited influence in some areas. It should be noted that SVE-2 is located in proximity to monitoring well MW-3 where the highest VOC concentrations were reported in subject property groundwater.

- During the SVE / AS pilot test, air flow in SVE-1 was low, ranging from 2.00 CFM (SVE initial step) to 5.24 CFM (air sparge pilot test – third step). Conversely, air flow in SVE-2 was significantly higher and increased during each step of the SVE and AS pilot test. Air flow in SVE-2 during the SVE only pilot test ranged from 24.52 to 37.90 CFM. The AS pilot test indicated limited influence; however, it was assumed that the AS point may not be representative of Site conditions. The AS layout and ROI was based on typical tight subsurface soil conditions and practical site constraints that limited the ability to install AS points in some

areas of the subject property. In addition, the depths of the AS points for the pilot test were limited vertically to minimize pilot test costs. It is anticipated that installing the AS points deeper into the uppermost underlying bedrock will increase ROI and mass transfer rate. This could be further evaluated with completion of a supplemental pilot test with at least one AS point installed in the weathered bedrock horizon where more permeable subsurface conditions may be present.

- During operation of the air sparge system, static water levels decreased slightly in comparison to baseline DTW levels. No significant mounding of the groundwater table was observed during operation of the air sparging system.

- PID readings from the SVE only pilot test indicated total VOC concentrations ranged between 12.7 ppm and 122.6 ppm. During operation of the air sparging system, PID readings ranged from 14.9 ppm (SVE-1) to 127.8 ppm (SVE-2). As with the SVE only pilot test, PID readings were significantly higher in SVE-2.

- Laboratory testing via TO-15 for the Project Parameters was completed for the two SVE points following the SVE Only and SVE / AS Pilot Tests. Laboratory results are summarized in Table 3-2 above with copies of the laboratory data sheets included in Appendix K. This data indicated that influent vapor samples SVE-2 and AS SVE-2 reported significantly higher VOC concentrations than SVE-1 and AS SVE-1.

- The AS system operating with the SVE slightly increased the VOC removal rates. This was observed with the PID readings and TO-15 testing (23,511 $\mu g/m^3$ total VOCs during the SVE Only Test at SVE-2 vs 27,360 $ug/m^3$ during the SVE / AS Test at SVE-2). Although these concentrations and thus mass removal rates will decrease over time, the mass removal rate of the SVE/AS system based on the TO-15 sampling during the pilot test indicates a mass removal rate of 0.09 lbs. VOCs / day. This mass removal rate was based on the 27,360 $\mu g/m^3$ total VOCs extracted from SVE-2 during the combination SVE/AS test at an air flow rate of 38.14 SCFM, as follows:

  27,360 $\mu g/m^3$ * 1 g / 1,000,000 ug * 0.002205 lbs. / g * 1 $m^3$ / 35.3147 $ft^3$ * 38.14 $ft^3$ / min =

  0.0000651 lbs. / min * 60 min / hr. * 24 hrs. / day = 0.09 lbs. / day

- The air flow rate into the AS pilot test point was limited and as such may limit the mass transfer rate of volatiles from the saturated zone and into the vadose zone for capture by the SVE system.

- The variation in soil vapor extraction rates between SVE-1 and SVE-2 during the pilot test indicates heterogeneous soil conditions and thus may limit the ability to extract VOCs in soil throughout the area of remediation. In addition, preferential pathways (utility bedding) may channelize the air flow and subsurface infrastructures (USTs and associated concrete footers) will also limit air flow in some areas.

### 3.3.8 Conclusion

Based on the results of the SVE/AS pilot test, the following conclusions are provided:

- A full-scale SVE/AS system is feasible for this site; however, site constraints (including tank fields, utilities, product lines, building, etc.) may limit the ability of the system to be installed in the ideal locations.

- Due to low air flow reported in SVE-1 during pilot testing, in conjunction with the shallow character of the groundwater aquifer, horizontal SVE piping is recommended verses vertical extraction points. The location of horizontal SVE piping and vertical AS points will take into account the locations of UST components, system piping, and other buried conduits.

- As discussed above, the AS pilot test indicated limited influence. It is anticipated installing the AS points deeper into the underlying weathered bedrock where more permeable conditions may be present could potentially increase ROI and mass transfer rates. Increasing the number of AS points can help off-set the reduced air flow.

- Treatment of the SVE system discharge will be necessary and all applicable PADEP regulations and guidance will be followed. It is anticipated that discharge water will be drummed and disposed of in accordance with applicable and appropriate regulations. During system startup, LaBella will evaluate the amount of water to determine routine removal of water from the moisture separator and determine the most cost-effective approach to disposal.

Based on the results of the SVE / AS pilot study, it is recommended that the full scale system provide some contingency points to be added after the initial system installation is complete and actual, sustainable ROI is measured. Thus areas of SVE influence or AS influence that are limited due to porous media can be addressed through additional points in select locations. The total number of SVE/AS points presented in the following section of this RAP may be expanded upon. Increasing the number of AS points can help off-set the reduced air flow and thus reduce volatilization rate. Contingency statements are provided.

## 4. REMEDIAL ACTION PLAN - SCOPE OF WORK

### 4.1 Purpose

In response to the presence of soil and groundwater contamination at the subject property, and in conjunction with 25 PA Code Chapter 245.301-313 regulations, LaBella has prepared this RAP to initiate active soil and groundwater remediation activities at the subject property.

### 4.2 Project Parameters

For the purpose of this RAP, the parameters of concern are limited to a combination of the Unleaded Gasoline Parameters and the Diesel Fuel / Fuel Oil #2, and Kerosene Parameters specified in the April 1, 1998 PADEP Technical Document: Closure Requirements for Underground Storage Tank Systems, as amended August 27, 2016. All future soil and groundwater analyses will be conducted in accordance with EPA Method 8260. The list of the "Project Parameters" is as follows:

- Benzene
- Cumene
- Ethylbenzene
- MTBE
- Naphthalene
- Toluene
- Total Xylenes
- 1,3,5-TMB
- 1,2,4-TMB

### 4.3 Proposed Cleanup Standards

According to Act 2, a remediation cleanup standard can be selected for each media of concern and furthermore for each compound of concern. The four (4) standards provided in Act 2 include the Statewide Health Standard (SHS), site-specific standard (SSS), background standard and special industrial area (SIA) provision. Since no onsite migration of contaminants from an offsite source is present, the background standard cannot be attained. In addition, the site does not qualify as a SIA as it is not located within a designated Keystone Opportunity Zone. Therefore, the SHS and SSS are viable options for the site.

To demonstrate attainment of the SHS, site soil and groundwater must be remediated to concentrations equivalent to the EPA drinking water standards. However, the selection of the SSS requires elimination of risks associated with elevated target compounds. The elimination of risks cannot be completed without implementing institutional and/or engineering controls placed on the site. Therefore, the property owner has chosen to demonstrate attainment of the Non-Residential, Used Aquifer (TDS<2500 mg/l), SHS for the target compounds **for site soil** and the Residential, Used Aquifer (TDS<2500 mg/l), SHS for the target compounds **for groundwater**. Refer to Table 4-1 for a summary of the respective SHS MSCs. The standards are reflective of the August 27, 2016 revisions to the regulations.

**Table 4-1**
**Quinn's Café Property**
**Summary of the Applicable Soil & Groundwater MSCs**

| Parameter | Soil MSCs (mg/kg)* | Groundwater MSCs (ug/l) |
|---|---|---|
| Benzene | 0.5 / 0.5 | 5 |
| Cumene | 2,500 / 350 | 840 |
| Ethylbenzene | 70 / 70 | 700 |
| MTBE | 2 / 2 | 20 |
| Naphthalene | 25 / 10 | 100 |
| Toluene | 100 / 100 | 1,000 |
| 1,2,4-TMB | 35 / 6.2 | 15 |
| 1,3,5-TMB | 210 / 120 | 420 |
| Total Xylenes | 1,000 / 1,000 | 10,000 |
| Comment | Non-Residential SHS | Residential SHS |

(*) Soil MSCs for unsaturated / saturated conditions

4.4 Offsite Access Issues

Access to five (5) offsite properties was required for the completion of site characterization activities. For the purpose of the proposed scope of work provided below, ongoing access to the offsite properties will be required for completion of quarterly groundwater monitoring activities. Information associated with the offsite properties is as follows:

Mr. Jack J. Giordano
Archbald Borough Manager
400 Church Street
Archbald, PA 18403
Monitoring Wells: MW-12 and MW-13

Mr. Joe Fetcho
211 Constitution Avenue
Jessup, PA 18434
Monitoring Wells: MW-7 and MW-8

Mr. John Chekan
227 South Main Street
Archbald, PA 1403
Monitoring Well MW-9

Mr. Brad Hall
Facilities Manager - NBT Bank
52 South Broad Street
Norwich, NY 13815
Monitoring Well: MW-10

William Krenitsky, Jr.
232 South Main Street
Archbald, PA 1403
Monitoring Wells: MW-6 and MW-11

## 4.5 Quarterly Groundwater Monitoring

LaBella will complete full rounds of groundwater monitoring while the RAP is being reviewed by PADEP and while the chosen remedial alternative is being implemented. A summary of the scope of work associated with quarterly groundwater monitoring activities is provided below under Task 2.0. The most recent monitoring event was conducted on January 28-29, 2019 and will serve as the 1st Quarter 2019 event. The next scheduled monitoring event will be completed in April 2019 and will serve as the 2nd Quarter of 2019 event. It is anticipated that this event will also serve as a baseline monitoring event (Task 2.0) prior to startup of active remediation activities.

## 4.6 Proposed Scope of Work Summary – Implementation of the Remedial Action

The following scope of work summary has been prepared based on the results of the SVE/AS Pilot Test summarized above.

### Task 1.0 – Project Planning / Project Management

*Task 1.1: Preparation of Scope of Work & Project Guidance Documents*

This task includes the preparation of this Scope of Work (SOW) and the associated Cost Summary. This SOW was prepared in accordance with the guidelines and standards pursuant to Pennsylvania's *"Land Recycling and Environmental Remediation Standards Act"* (Act 2) of July, 1995, as amended; the Corrective Action Process under the Pennsylvania Storage Tank and Spill Prevention Act (25 PA Code Chapter 245.301 – 245.313, Corrective Action Process); and the PADEP's Groundwater Monitoring Guidance Manual dated December 1, 2001, as applicable.

*Task 1.2: Project Management*

LaBella will complete all necessary, reasonable and appropriate project management activities for the duration of the contract period. These activities would be expected to include client communications and updates, meetings, permitting, record keeping, subcontracting, personnel / subcontractor management, quality assurance / quality control, scheduling and other activities consistent with remediation projects such as this.

### Task 2.0 – Baseline Groundwater Monitoring Activities

LaBella proposes to complete a full round of groundwater monitoring to establish baseline conditions prior to startup of the full scale groundwater remediation system. Groundwater monitoring wells and monitoring points MP-2 and MP-3 sampled as part of these activities are outlined in Table 4-2, as follows:

**Table 4-2**
**Quinn's Café Property**
**Groundwater Monitoring Well Locations**

| Well # | Location |
|---|---|
| MW-1 | Subject Property |
| MW-2 | Subject Property |
| MW-3 | Subject Property |
| MW-4 | Subject Property |
| MW-5 | Subject Property |
| MW-6 | Krenitsky Property |

**Table 4-2 (cont.)**
**Quinn's Café Property**
**Groundwater Monitoring Well Locations**

| Well # | Location |
|---|---|
| MW-7 | Fetcho Property |
| MW-8 | Fetcho Property |
| MW-9 | Chekan Property |
| MW-10 | NBT Bank Property |
| MW-11 | Krenitsky Property |
| MW-12 | Archbald Borough |
| MW-13 | Archbald Borough |
| MP-2 | Subject Property |
| MP-3 | Subject Property |

Each groundwater monitoring well or point will be sampled in accordance with the "*Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations"* (ASTM D16771-02), as applicable. Those monitoring wells not suited to low flow sampling were purged and sampled via hand-bailing methods. Groundwater effluent generated during well purging activities will be either treated onsite with activated carbon and discharged. The fifteen (15) groundwater samples collected, in addition to two (2) QA/QC field blanks, will be submitted to ALS Environmental and analyzed for the Project Parameters via EPA Method 8260. All sampling activities (including sample collection, equipment decontamination, preservation, shipment and chain-of-custody) will be conducted in accordance with standard USEPA and PADEP protocols.

In accordance with 25 Pennsylvania Code §245.312(b), LaBella will prepare and submit Remedial Action Progress Reports (RAPRs) to update the Client, PADEP and USTIF on the progress of the project. The RAPRs will include, but may not be limited to: (1) a summary of current groundwater data (including field and intrinsic data); (2) historical groundwater data tables (including field and intrinsic data); (3) a summary of field methodology; (4) groundwater isopleth maps (for each compound exceeding SHS); (5) groundwater elevation data; and (6) groundwater contour maps.

Task 3.0 - Permits

LaBella will submit a request for any permits that may be required by the United States Environmental Protection Agency (USEPA) and PADEP regarding the implementation of the remedial technology. Although the USEPA must be notified of the proposed activities, a permit is generally not required under the Underground Injection Control (UIC) Program. LaBella will prepare and submit to PADEP a Request for Determination of Changes of Minor Significance and Exemption from Plan Approval / Operating Permit under 25 PA Code §127.14 and §127.449. In addition, portions of the proposed remediation system may be located in the PennDOT ROW. If so, LaBella will obtain access agreements / permits necessary to install AS points and SVE trenches that may be located in the PennDOT ROW.

Task 4.0 – Supplemental Air Sparging Only Pilot Test

As discussed above, the results of the AS pilot test indicated limited influence, however, it was assumed that the AS point may not have been representative of Site subsurface conditions. The AS layout was based on typical tight subsurface soil conditions and practical site constraints that limited the ability to install AS points in some areas. In addition, the depth of the AS points were limited vertically so as to minimize pilot test costs. To address this limitation, LaBella will complete a supplemental AS only pilot test. The AS only pilot test will

involve installing two AS points with the screen extending into the weathered bedrock where more permeable conditions may be present. It is anticipated that installing the AS points deeper will increase ROI and mass transfer rate and provide valuable data to refine the AS system design.

Task 5.0 – Design, Installation and Operation of the SVE/AS Remediation System

*General*

Based on the results of the SVE/AS pilot test summarized above and the proposed supplemental AS only pilot test, the general components of the conceptual system design, installation and operation of the full scale remedial system are provided below.

*System Design & Installation*

For the purpose of the system design, LaBella is using a ROI of 10 feet northwest of the Tank #002 – Tank #004 UST field. The system in this portion of the subject property will utilize a horizontal soil vapor extraction system and vertical air sparge points. The ROI southeast of the Tank #002 and Tank #004 UST has been determined to be 20 feet. The resulting grid will include four (4) horizontal SVE recovery trenches and thirteen (13) vertical sparge points placed in the area of the known soil and groundwater contamination. The four horizontal SVE trenches will include approximately 310 linear feet of 4-inch diameter slotted piping that will connect to approximately 265 feet of solid header piping. The solid SVE header piping will terminate at the SVE/AS equipment trailer located on the north exterior side of the convenience store building. Refer to Appendix A for a Conceptual SVE/AS Point Location Map (**Figure 19**). This design assumes that the radius of influence is uniform in all directions from the SVE / sparge points. The system components will be installed as follows:

- The four (4) horizontal SVE recovery trenches will be installed in the area of the soil and groundwater contamination. The trenches will be installed to an approximate depth of 3.0 feet to 3.5 feet below grade. A total of 310 linear feet of 4-inch diameter ID PVC slotted pipe will be placed within the trenches. The trench will then be backfilled to 4.0 feet below grade with pea gravel. LaBella recommends placing an impermeable barrier (i.e. plastic sheeting) on top of the pea gravel to reduce short circuiting. This impermeable barrier should not extend to the sides of the trenches as doing so could potentially limit influence horizontally and also increase the potential for pulling groundwater vertically into the piping. The remaining exposed portion of the trenches will be backfilled with 1A stone, compacted, and finished with asphalt.

- The slotted PVC pipe will be connected to solid 4-inch diameter PVC SVE piping (approximately 265 linear feet), which will run to the SVE/AS equipment trailer.

- The thirteen (13) vertical AS points will be installed below the petroleum-impacted zone with the bottom of the AS points extending into the uppermost portion of the bedrock with the intent of placing a portion of or all of the screened section within the weathered bedrock zone where it is anticipated there may be increased permeability. The AS point will be constructed using 1-inch ID PVC and screened with 0.010 slot well screen threaded to solid PVC riser. A 1.0-foot-long solid PVC well sump will be constructed at the bottom of each sparge point. A sand pack consisting of #00N silica sand will be placed (~7 feet below grade) followed by a cement-bentonite grout seal extending to 1.0 foot below grade.

- As indicated above in Section 3.3.8, this RAP provides contingency points to be added after the initial system installation is complete and actual, sustainable ROI is measured. Thus, areas

of SVE and/or AS influence that are limited due to porous media can be addressed through installation of additional points in select locations, as necessary.

- The major components of the SVE/AS system will include the following.

  - Soil Vent Blower: Based on the results of the pilot test, the SVE portion of the system will operate at a vacuum of 4-inches of mercury and a maximum extraction flow rate of 350 cubic feet per minute (CFM) per SVE well. The SVE system proposed by LaBella was based on a horizontal system layout and includes four (4) "legs" with a total estimated flow rate of 350 cfm. The basis of design was based on the areas of remediation with a 5-foot Vadose Zone. The remediation design assessed air turnover rates for the volume of the Vadose Zone. A 350 CFM rate allows for adequate air turnover rate for the entire remediated Vadose Zone. Design calculations are included in Appendix L.-

  - Air Sparge Blower: Based on the results of the pilot test, the AS portion of the system will operate at a maximum pressure of 20 PSI and a maximum air flow rate of 150-200 cubic feet per minute (CFM). Thirteen (13) air sparge points have been proposed. The air sparge blower will be sized to match these requirements. The proposed blow should provide a good range of air flow should deeper AS points provide better influence.

  - Water Separator: A water separator will be used to remove water from the air stream extracted from the soil vent pump. No water was generated during the pilot test.

  - Air Emission Control: The air emission control will be provided via a large carbon canister. Based on the results of the Pilot Test, A Carbonair GPC 20R vapor phase carbon vessel has been specified. This vessel is capable of handling up to 2,000 CFM and contains 2,000 pounds of GAC. LaBella will prepare and submit to the PADEP a Request for Determination of Changes of Minor Significance and Exemption from Plan Approval / Operating Permit under 25 PA Code §127.14 and §127.449 prior to bringing the system online.

  - All horizontal SVE piping will be installed in subsurface trenching and connected to the system components, which will be housed in a secured SVE/AS equipment trailer located on the north exterior side of the convenience store building. Note, no engineering drawings have been prepared. The locations of the feed lines, electrical conduit and any other buried features will impact the final locations of the SVE wells, air sparge points and associated lines. An As-Built drawing will be prepared. The SVE horizontals will be piped individually or with a few separate headers; however, prior to each perforated SVE extraction piping section, a valve will be placed that will provide the ability to control each horizontal section individually for system balancing and cycling.

  - For the AS points, a header system is proposed with four (4) headers; however, a valve would be placed on each vertical AS point providing system balancing and the ability to control each point to cycle the system as needed.

- As shown on Figure 19, portions of the proposed SVE / AS remediation system may be located in the PennDOT ROW. If so, LaBella will obtain the access agreements and permits necessary to install AS points and SVE trenches.

*System Operation and Maintenance Schedule*

The results of the SVE / AS pilot test provided the data required to estimate the time required for cleanup. For the purpose of this RAP, the O&M schedule and completion time estimates are as follows:

- **System Startup:** Once the system has been installed, authorization to start the system will be sought from the PADEP.

- **Groundwater:** A baseline groundwater monitoring event (Task 2.0) will be completed prior to system startup. Quarterly groundwater monitoring (Task 5.0) will be initiated following system startup. Once the groundwater remediation goals have been met, the remediation system will be shut down and quarterly groundwater attainment monitoring will be initiated. For the sake of this RAP, LaBella is estimating two (2) years for groundwater remediation. Therefore, eight (8) quarters of remediation monitoring and eight (8) quarters of attainment monitoring are proposed. LaBella will continually evaluate groundwater monitoring data and any wells that report non-detect concentrations or are below their Act 2 SHSs for eight consecutive quarters could potentially be removed from the monitoring well network following PADEP consultation and approval.

- **Air Monitoring & System O&M:** A general schedule for air monitoring and system O&M is as follows:

    - PID readings will be collected from the vapor extraction sampling port (prior to the carbon canisters) on an hourly basis for the first day of operation. One (1) vapor sample will be collected for laboratory analysis at the end of Day 1. This sample will be analyzed for the Project Parameters via EPA Method TO-15. Flow rates will be checked and adjusted as necessary during the first day of operation.

    - PID readings will be collected from the vapor extraction sampling port daily for the first week of operation. In addition, system flow rates will also be monitored and adjusted as necessary. One (1) vapor sample will be collected for laboratory analysis at the end of Week 1.

    - PID readings and system O&M will be completed twice weekly for Week 2 through Week 4. PID readings will also be collected from the vapor extraction point following the air effluent treat system to monitor for breakthrough. One (1) vapor sample will be collected for laboratory analysis at the end of Week 2, Week 3, and Week 4.

    - PID readings from the vapor extraction sampling port and from the vapor extraction point following the air effluent treat system will be collected monthly starting with Month 2. System O&M will also be conducted at this time. The collection of PID readings and the completion of O&M activities will also be conducted during of any other onsite activities (e.g. quarterly groundwater monitoring). One (1) vapor sample will be collected for laboratory analysis at the end of each month starting at the end of Month 2.

- **Contaminant Mass Calculations:** LaBella completed contaminant mass calculations based on existing soil and groundwater data. Refer to Appendix M for a summary of these calculations. The following is noted:

    - A worst case soil contaminant mass of 617.2 lbs. was determined based on the smear zone data collected from TB-5B. Based on all of the soil data collected within the smear zone plume, an average soil mass of 173.2 lbs. was calculated.

    - The groundwater contaminant mass was determined based on contamination concentrations present in MW-3, with the plume geometry determined via a review of the associated groundwater isopleths and the associated plume estimates provided in the groundwater F&T. A groundwater contaminant mass of 1.05 lbs. was calculated.\

- **SVE Removal Rate Evaluation:** Process and performance monitoring data will be utilized to track VOC vapor mass removal rates, as follows:

    - As the SVE/AS treatment progresses, VOC mass removal rates may decline to a slow and steady level. This is usually attributed to equilibrium between the air being flushed through the soils and a mass-transfer-limited condition of the remaining contaminants.

    - At some point, the mass removal will reach an asymptotic condition and the continued operation of the SVE/AS system will be of little value. A potential asymptotic condition will be based on the observation that the VOC vapor mass removal rate is less than 10% of the observed baseline for greater than 30 consecutive days. This evaluation will be based on TO-15 data and not PID data.

    - Reductions in mass removal due to saturated soils / high water tables will not be considered an asymptotic condition, but will be noted and evaluated.

    - Soil and groundwater attainment will be demonstrated as outlined under Task 5.0 and Task 7.0, below. In the event asymptotic conditions are met prior to achieving soil and groundwater attainment, evaluations of alternative remedial approaches vs. site-specific closure will be made.

- **Estimated Time for Completion:** Based on the results of the pilot test in conjunction with the contaminant mass calculations made, the following time estimates for the completion of the remediation are provided:

    - For the purpose of this evaluation, the 27,360 $\mu g/m^3$ total VOCs recovery rate from the SVE / AS Pilot Test at SVE-2 will be used in conjunction with the worst case soil and groundwater contaminant mass of **618.70 lbs**.

    - Based on the pilot test, the optimal flow rate of 350 CFM at 4" of mercury was determined.

    - The full scale system calls for four horizontal SVE trenches and thirteen (13) vertical air sparge points The following calculation is provided:

      27,360 $\mu g/m^3$ * 1 g / 1,000,000 ug * 0.002205 lbs. / g * 1 $m^3$ / 35.3147 $ft^3$ * **350 $ft^3$ / min** = 0.0006 lbs. / min * 60 min / hr * 24 hrs / day = 0.864 lbs. / day

- Total Contaminant Mass of 618.70 lbs. ÷ 0.864 lbs. / day = 716 days from system startup (approximately 2 years from startup).

*Handling of System Discharges and Waste Materials*

The operation of the remedial system outlined above will result in the following system discharges and waste materials.

- **Air Discharges**: Air emissions will be controlled under a Request for Determination of Changes of Minor Significance and Exemption from Plan Approval / Operating Permit under 25 PA Code §127.14 and §127.449. Air discharges will be treated onsite with activated carbon. The spent activated carbon will be transported offsite for proper disposal. A sample of the carbon matrix will be collected and analyzed for TCLP Benzene prior to the initiation of the T&D activities. The results of this analysis will determine hazardous vs. non-hazardous waste for the purpose of T&D.

- **Aqueous Waste**: A small amount of aqueous waste from the water separator is anticipated. This aqueous waste will be placed in 55-gallon drums, as necessary, and staged onsite pending transportation and disposal. A sample of the aqueous waste will be collected and analyzed for TCLP Benzene prior to initiating T&D activities. The results of this analysis will determine hazardous versus non-hazardous waste for the purpose of T&D. The aqueous waste will be transported off-site by a licensed contractor to a properly licensed disposal facility.

Task 6.0 – Quarterly Groundwater Monitoring Activities & Demonstration of Groundwater Attainment

Groundwater samples will be collected monitoring wells MW-1 through MW-13 and monitoring points MP-2 and MP-3 that are located onsite and on the adjacent properties. Each of the groundwater monitoring wells will be sampled in accordance with the "*Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations"* (ASTM D16771-02), as applicable. Those monitoring wells not suited to low flow sampling will be purged and sampled via hand-bailing methods. All groundwater effluent generated during the well purging activities will be treated onsite as indicated below (Task 6.0). The fifteen (15) groundwater samples in addition to two (2) QA/QC field blank, will be submitted to ALS Environmental and analyzed for the Project Parameters via EPA Method 8260. All sampling activities (including sample collection, equipment decontamination, preservation, shipment and chain-of-custody) will be conducted in strict accordance with standard USEPA and PADEP protocols. The completion of these activities will serve to monitor the success of the SVE/AS system while the system is operational. Once the groundwater remedial goals have been achieved, the Task 5.0 activities will be utilized toward the demonstration of groundwater attainment. For the purpose of this RAP, LaBella is estimating two (2) years of remediation monitoring and two (2) years of attainment monitoring. As discussed above, LaBella will continually evaluate groundwater analytical results during remediation monitoring and attainment monitoring. If any wells report laboratory results of non-detects and/or are detected below their Act 2 SHSs for eight consecutive quarters, LaBella, following consultation and approval by PADEP, may remove these wells from the monitoring well network.

In accordance with 25 Pennsylvania Code §245.312(b), LaBella will prepare and submit RAPRs to update the Client, the PADEP and USTIF as to the progress of the project. It is anticipated that a RAPR will be submitted on a quarterly basis following the receipt of groundwater sampling results from the laboratory. Each RAPR will include, but may not be limited to (1) a summary of current groundwater (including field and intrinsic data); (2) historical groundwater data tables (including field and intrinsic data); (3) a summary of field methodology; (4)

groundwater isopleth maps (for each compound exceeding SHS); (5) groundwater elevation data; and (6) groundwater contour maps.

Task 7.0 - Waste Material Handling

Waste materials generated as part of this investigation will include monitoring well purge water, drill cuttings associated with the installation of the proposed SVE / AS injection points, extraction points and observation points, system waste water, and spent carbon drums. Waste materials will be handled as follows:

- All groundwater monitoring purge water will be treated onsite using activated charcoal, with the treated effluent discharged to the surface, in accordance with Table A-2 of the Act 2 TGM dated January 19, 2019.
- System installation spoils will be secured onside and transported offsite for proper disposal.
- System waste water will be containerized onsite, characterized as hazardous or non-hazardous and shipped offsite for disposal.
- Spent air effluent carbon will be containerized onsite, characterized as hazardous or non-hazardous and shipped offsite for disposal.

Task 8.0 – Demonstration of Soil Attainment

The review of background information indicates four (4) soil samples collected from the Vadose Zone and nine (9) samples collected from the Smear Zone expressed compound concentrations in excess of the applicable MSCs. LaBella proposes to complete soil attainment sampling subsequent to the groundwater remediation activities. LaBella will complete soil attainment sampling in accordance with the requirements included in 25 PA Code Chapter 250.707 (Statistical Tests). Accordingly, the regulations pertaining to "sites" where there is a release resulting in the remediation of 125 cubic yards to 3,000 cubic yards of contaminated soil will be followed. At the subject property, the area of the Vadose Zone and Smear Zone contamination has been determined to be approximately 650 cubic yards. As such, twelve (12) soil samples will be collected from the remediated area in accordance with the Systematic Random Sampling Procedures set forth in the Act 2 Technical Guidance Manual.

Due to the proximity of the proposed locations to the fuel dispensers and product feed lines, all twelve (12) proposed test borings will be pre-cleared via soft-dig technologies. The test borings will be completed to a maximum depth of 10 feet below grade (the Smear Zone has been identified at ~5 -7 feet below grade) using a track-mounted Geoprobe®. During borehole advancement, soil samples will be collected from each boring on a continuous basis from grade to the termination of the boring. Each soil sample will be visually evaluated for lithology and field screened for total VOCs using a Photoionization Detector (PID). Samples will be collected from the Vadose Zone and Smear Zone in accordance with the Systematic Random Sampling Procedures for laboratory analysis of the Project Parameters. All test borings drilled as part of this investigation will be backfilled with bentonite pellets and completed with an asphalt (cold patch) or concrete patch, as necessary.

The twelve (12) soil samples will be submitted to ALS Environmental and analyzed for the Project Parameters via EPA Method 8260. All sampling activities (including sample collection, equipment decontamination, preservation, shipment and chain-of-custody) will be conducted in strict accordance with standard US EPA and PADEP protocols.

Task 9.0 – Preparation of Remedial Action Completion Report

Subsequent to the completion of the soil and groundwater remediation activities, LaBella will prepare and submit a Remedial Action Completion Report (RACR) summarizing all of the work completed to date at the Site. This report will be completed in accordance with the requirements set forth in 25 Pennsylvania Code §245.313. This report will include, but may not be limited to, a summary of site history, a summary of the activities and findings associated with the site characterization and a summary of the soil and groundwater attainment activities. The RACR will include a request that PADEP provide relief of cleanup liability for the site in accordance with the Non-Residential, Used Aquifer (TDS <2,500 mg/l) SHS for soil and Residential Used Aquifer (TDS <2,500 mg/l) SHS MSC for groundwater. The RACR shall be signed and sealed by a Professional Geologist registered in the Commonwealth of Pennsylvania.

Task 10.0 – Site Closure

Following PADEP approval of the RACR, LaBella will properly abandon all existing groundwater monitoring wells, SVE points, AS injection points and soil-vapor monitoring points. Well abandonment activities will be conducted in accordance with the regulations and guidelines presented in Chapter 7 of the PADEP's *Groundwater Monitoring Guidance Manual* dated December 1, 2001. This task will also include the completion of the proper well abandonment forms and a compilation of photo documentation. In addition, the following site closure activities will be completed as necessary:

- Proper closure of soil-vapor monitoring points;
- Proper closure of existing MWs, SVE extraction points and sparge points;
- Well head removals and re-paving, as applicable.

## 5. ANTICIPATED PROJECT SCHEDULE

LaBella will schedule project activities in concert with DK & DK, LLC to commence at mutually agreeable times. The anticipated schedule for the implementation of soil and groundwater remediation is summarized in Table 5-1, as follows.

**Table 5-1**
**Project Schedule**
**Proposed Soil & Groundwater Remediation**
**Quinn's Café Property**

| Task # | Description | Timeframe |
|---|---|---|
| Pilot Test | Mobilize / Complete Pilot Test | Completed - Month 1 |
| | Submit RAP to PADEP | Month 2 |
| | Obtain RAP Approval From PADEP | Month 4 |
| | | |
| 1.0 | Project Planning / Project Management | |
| 1.1 | Scope of Work & Project Guidance Documents | Month 5 |
| 1.2 | Project Management | Ongoing |
| | | |
| 2.0 | Baseline Groundwater Monitoring Activities | Month 5 |
| | | |
| 3.0 | Access Agreements and Permits | Month 5 |
| | | |
| 4.0 | Supplemental AS Only Pilot Test | Month 6 |
| | | |
| 5.0 | Installation of Full Scale System | Month 7 |
| | Initiate SVE/AS System Operation | Month 8 |
| | | |
| 6.0 | Quarterly Groundwater Monitoring Activities | |
| 6.1 – 6.8 | Remediation Monitoring | Months 9-30 |
| 6.9 – 6.16 | Attainment Monitoring | Months 31-54 |
| | | |
| 7.0 | Waste Material Handling – Disposal of Spoils | Month 7 |
| | Waste Material Handling – Disposal of Spent Carbon | As Necessary |
| | Waste Material Handling – Disposal of System Water | As Necessary |
| | | |
| 780 | Demonstration of Soil Attainment | Month 55 |
| | | |
| 9.0 | Preparation of the RACR | Month 56 |
| | | |
| 10.0 | Site Closure | TBD |

## 6. SIGNATURES

This Act 32 – Revised Remedial Action Plan was prepared by:


Martin Gilgallon, P.G.
Regional Environmental Manager
LaBella Associates, PC
Pennsylvania Registered Professional
Geologist No. 000639-G

*"By affixing my seal to this document, I am certifying that the information contained herein is true and correct. I further certify that I am licensed to practice geology in the Commonwealth of Pennsylvania and that it is within my professional area of expertise to verify the correctness of this information".*

## References

The following references were utilized in the preparation of this document:


Braun, D.D., *Surficial Geology of the Dalton 7.5-Minute Quadrangle, Lackawanna County, Pennsylvania*: Pennsylvania Geological Survey, 4th Series, Open-File Report OFSM 07-01.0, 14 p. 2007.

Eckenrode, Joseph J., *Soil Survey of Lackawanna and Wyoming Counties, Pennsylvania*, United States Department of Agriculture, March 1982.

Geyer, A.R., and Wilshusen, J.P., 1982, *Engineering Characteristics of the Rocks of Pennsylvania*, Pennsylvania Topographic and Geologic Survey, Harrisburg, Environmental Geology Report EG 1, 300 p., (2nd Edition).

Hollowell, Jerrald R. and Harry E. Hoester, 1975, *Groundwater Resources of Lackawanna County, Pennsylvania*, Pennsylvania Topographic and Geologic Survey, Harrisburg, Water Resources Report W 41, 106 p.

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United States Geological Survey, 7.5-Minute Series, Olyphant, Pennsylvania Quadrangles.

25 Pennsylvania Code, Chapter 105, Dam Safety and Waterway Management, January, 1997.

# APPENDIX A

Site Maps and Figures

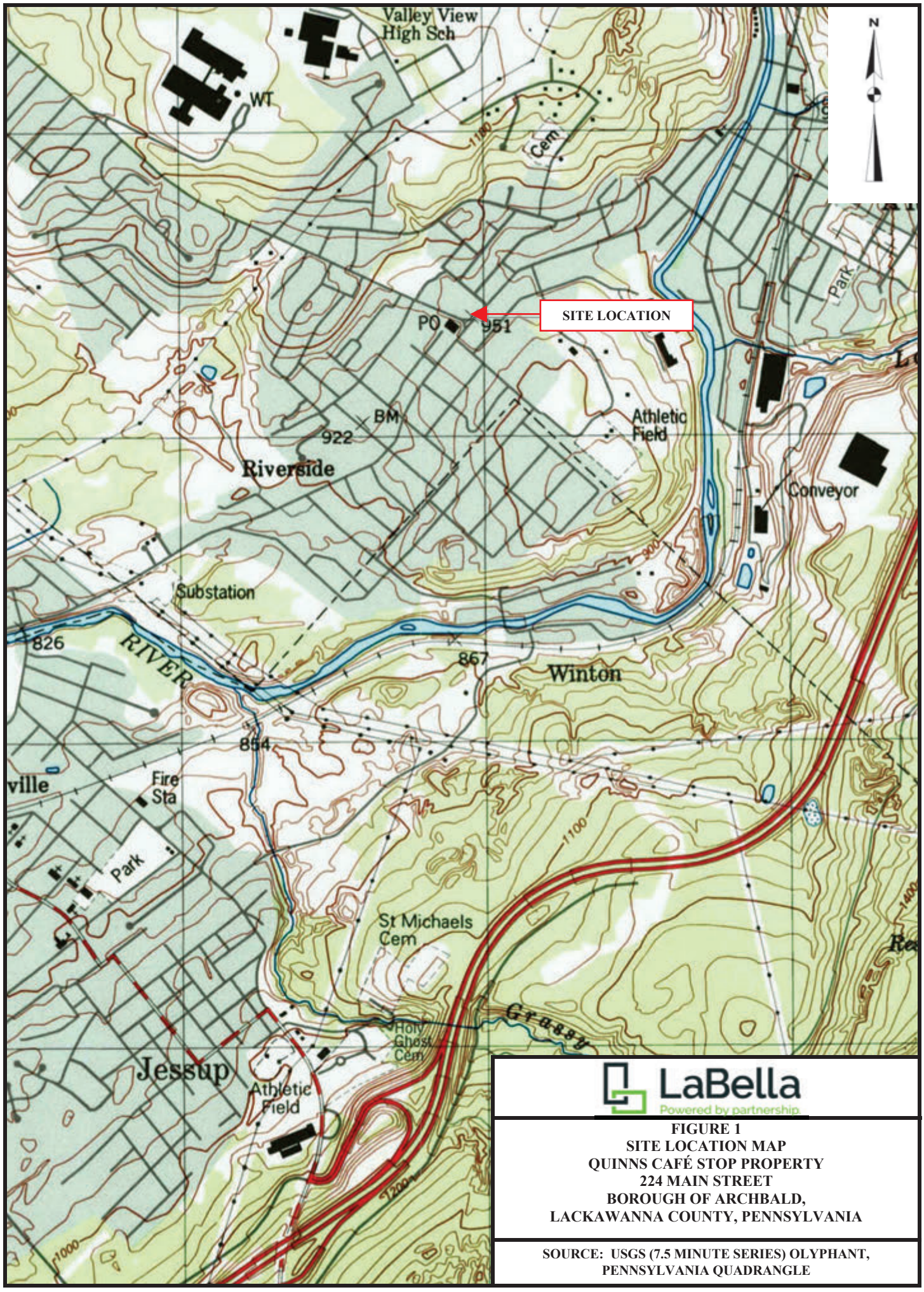


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**FIGURE 1**
**SITE LOCATION MAP**
**QUINNS CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: USGS (7.5 MINUTE SERIES) OLYPHANT, PENNSYLVANIA QUADRANGLE**


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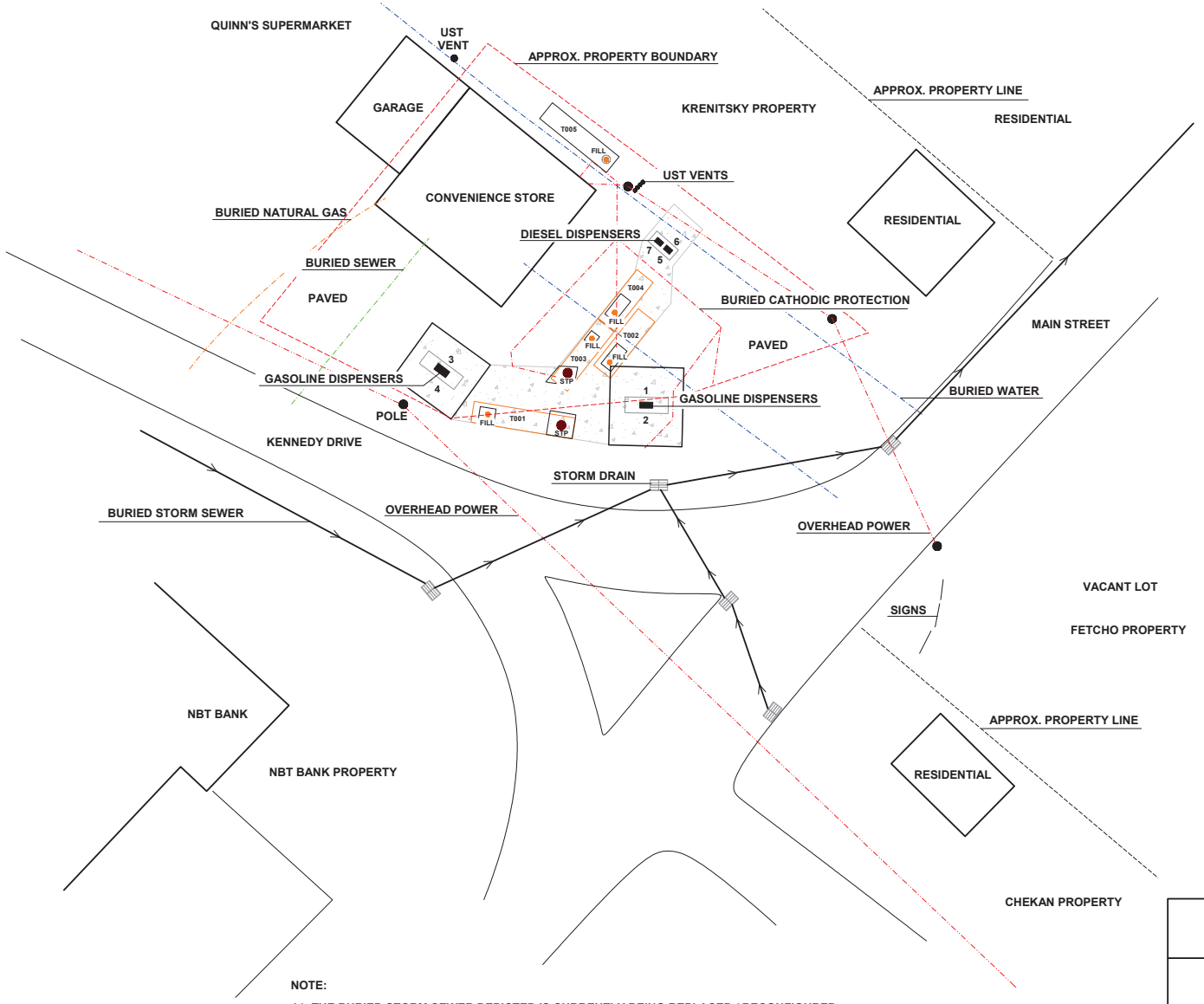
**FIGURE 2**
**LACKAWANNA COUNTY TAX MAP**
**QUINNS CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: LACKAWANNA COUNTY ASSESSOR'S OFFICE**




NOTE:

1.) THE BURIED STORM SEWER DEPICTED IS CURRENTLY BEING REPLACED / RECONFIGURED AS PART OF ROAD CONSTRUCTION ACTVITIES.

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Powered by partnership.

**FIGURE 3**
**SITE SKETCH**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 08/29/2017
SCALE: 1" = 30'


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**FIGURE 4**
**SITE SKETCH - AERIAL**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 09/06/2018
SCALE: 1" = 40'

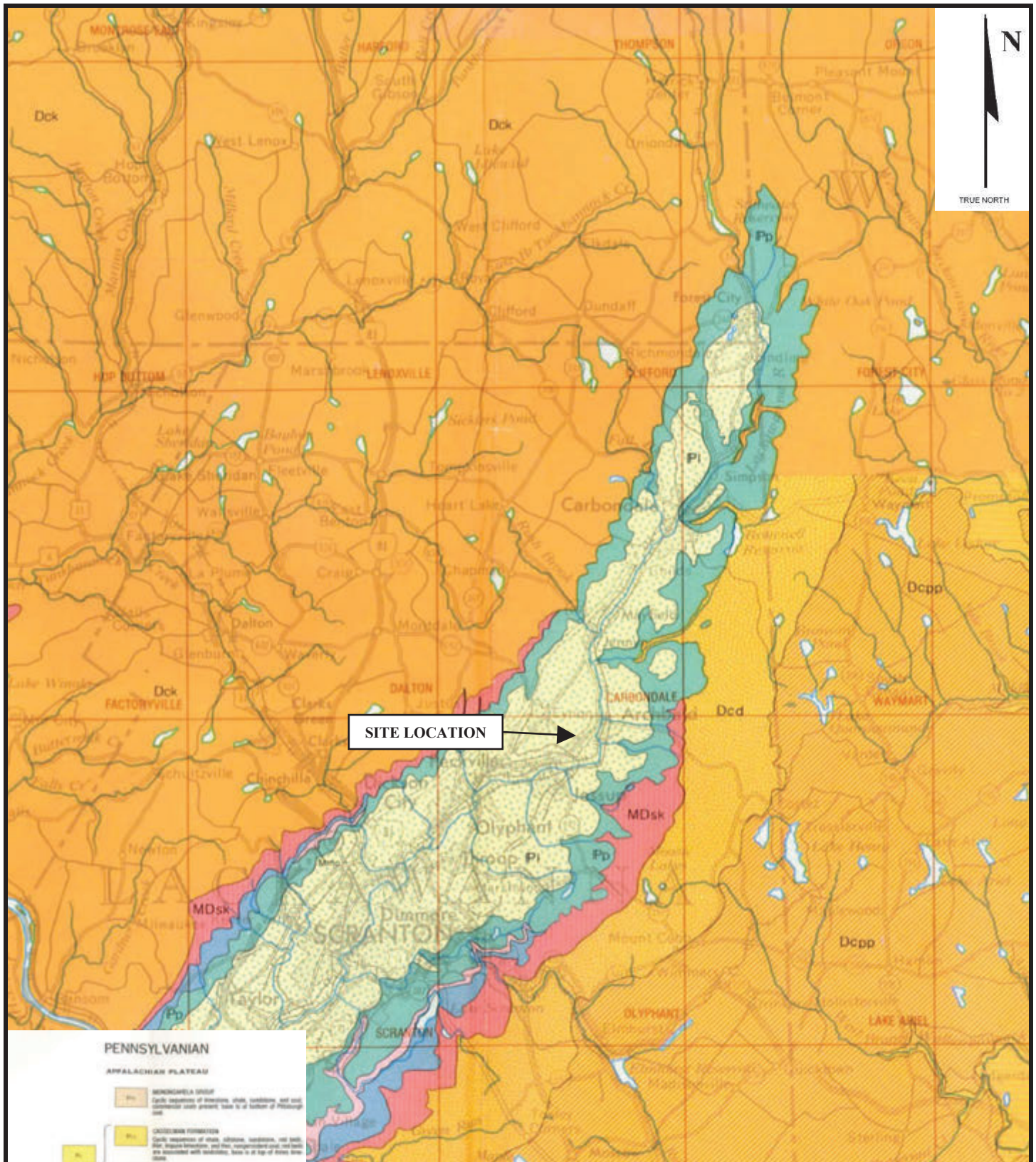


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**FIGURE 5**
**BEDROCK GEOLOGY MAP**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: GEOLOGIC MAP OF PENNSYLVANIA (BERG 1980)**

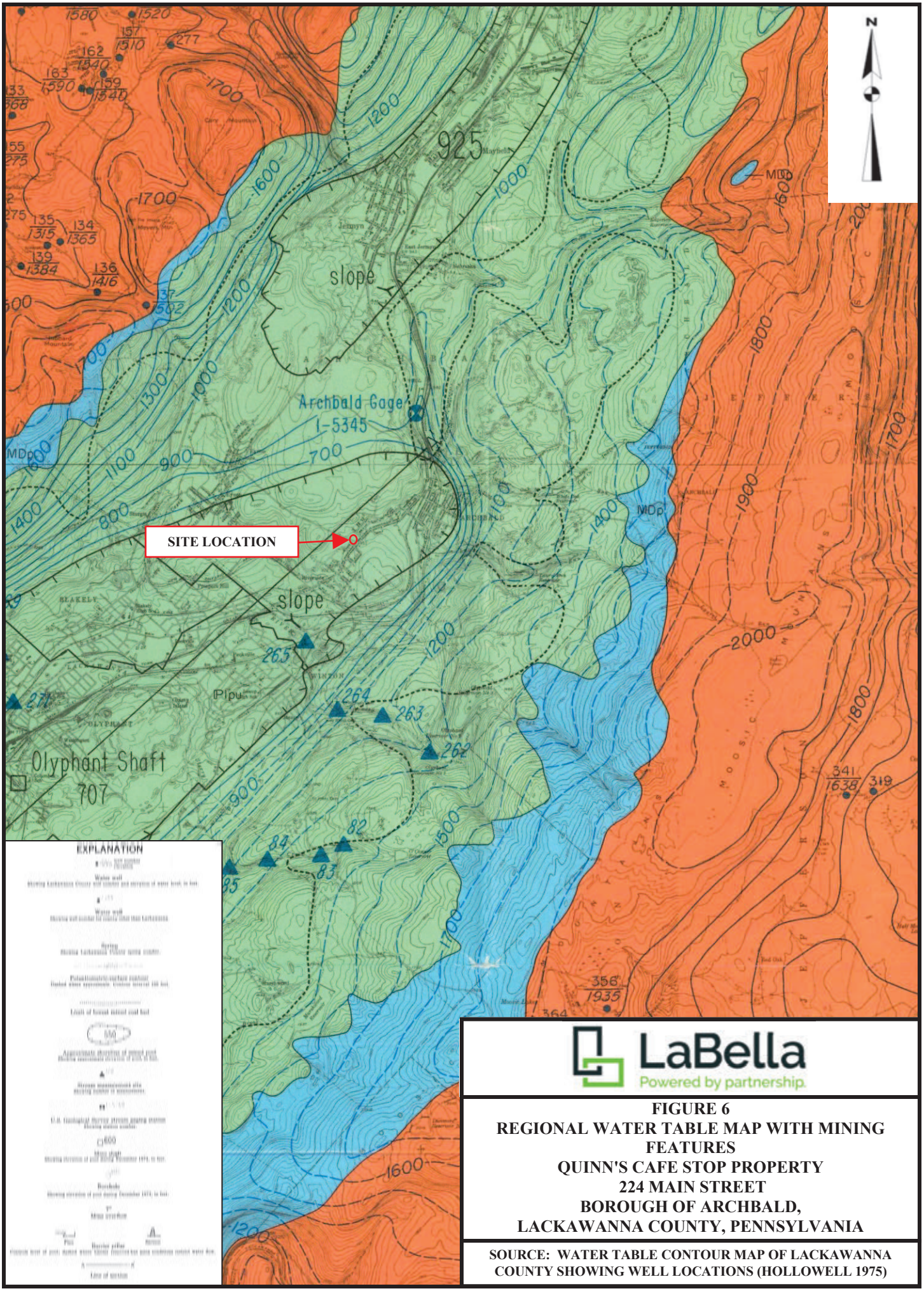


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**FIGURE 6**
**REGIONAL WATER TABLE MAP WITH MINING FEATURES**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: WATER TABLE CONTOUR MAP OF LACKAWANNA COUNTY SHOWING WELL LOCATIONS (HOLLOWELL 1975)**

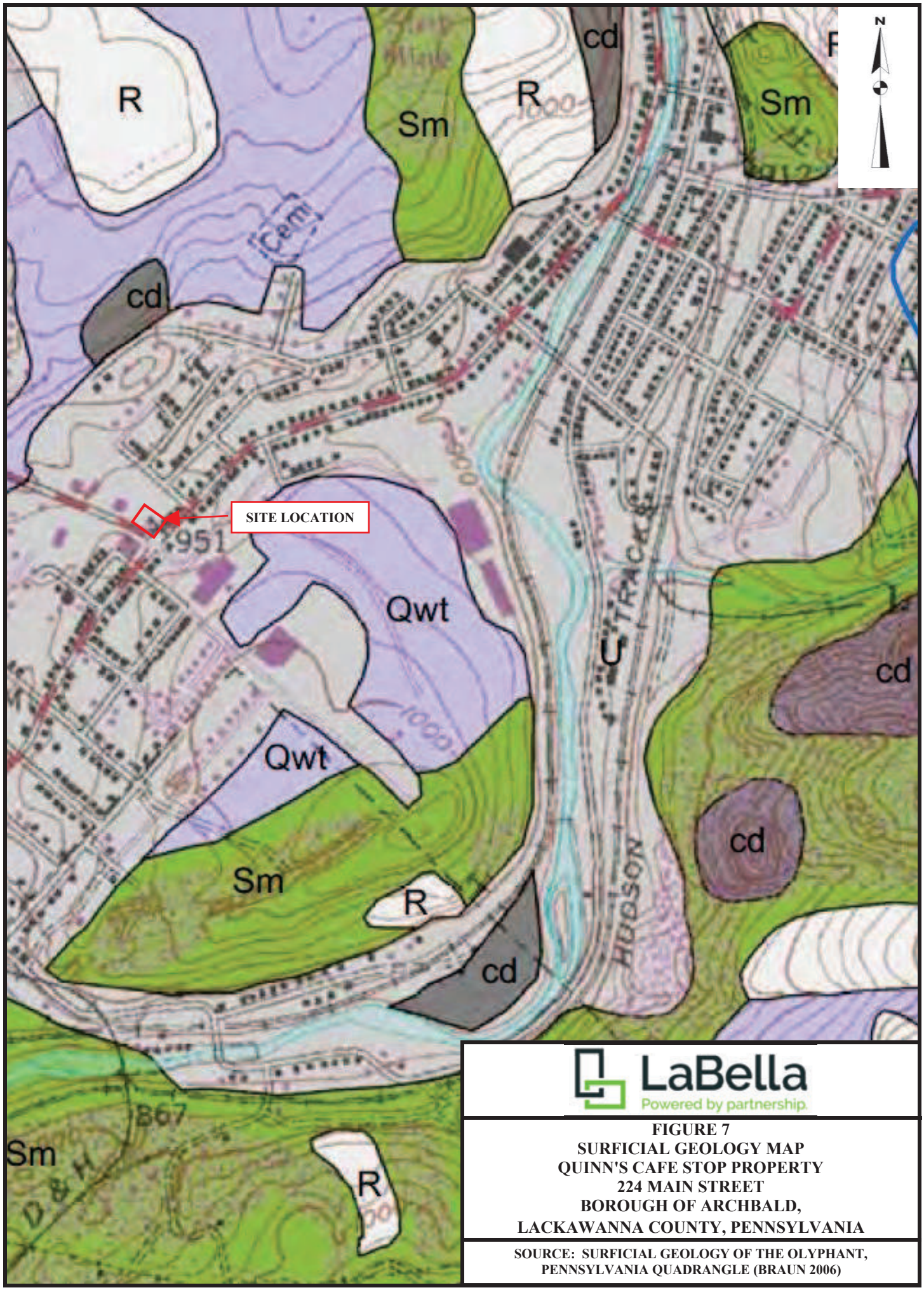


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**FIGURE 7**
**SURFICIAL GEOLOGY MAP**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: SURFICIAL GEOLOGY OF THE OLYPHANT, PENNSYLVANIA QUADRANGLE (BRAUN 2006)**

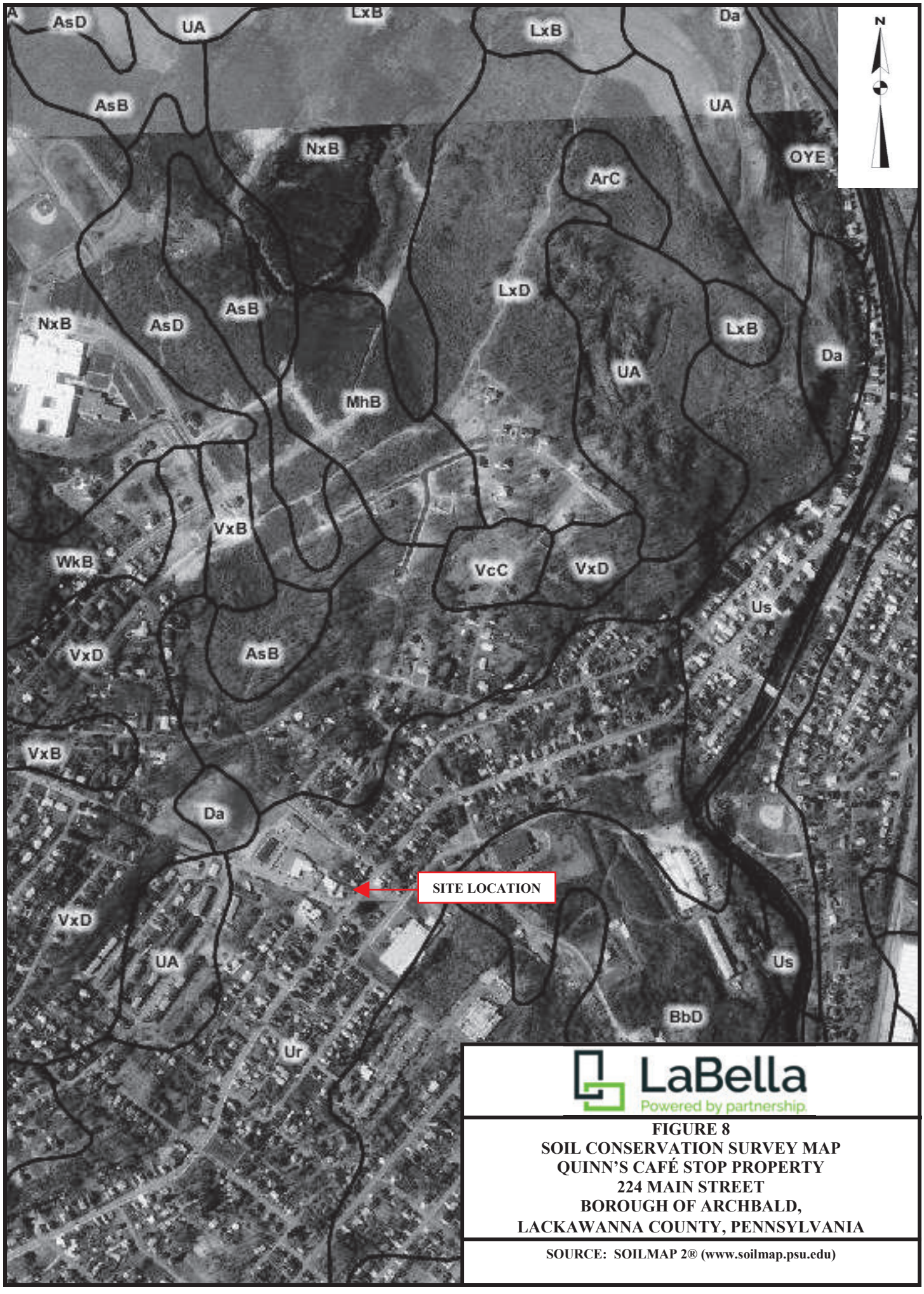


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**FIGURE 8**
**SOIL CONSERVATION SURVEY MAP**
**QUINN'S CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: SOILMAP 2® (www.soilmap.psu.edu)**


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**FIGURE 9**
**LOCAL WATERSHED MAP**
**QUINN'S CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: 2016 GOOGLE EARTH® IMAGERY**


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**FIGURE 10**
**NATIONAL WETLAND INVENTORY MAP**
**QUINN'S CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: SOILMAP 2® (www.soilmap.psu.edu)**


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**FIGURE 11**
**AREA MAP**
**QUINN'S CAFÉ STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

**SOURCE: 2017 GOOGLE EARTH® IMAGERY**
**(www.google.com/earth)**

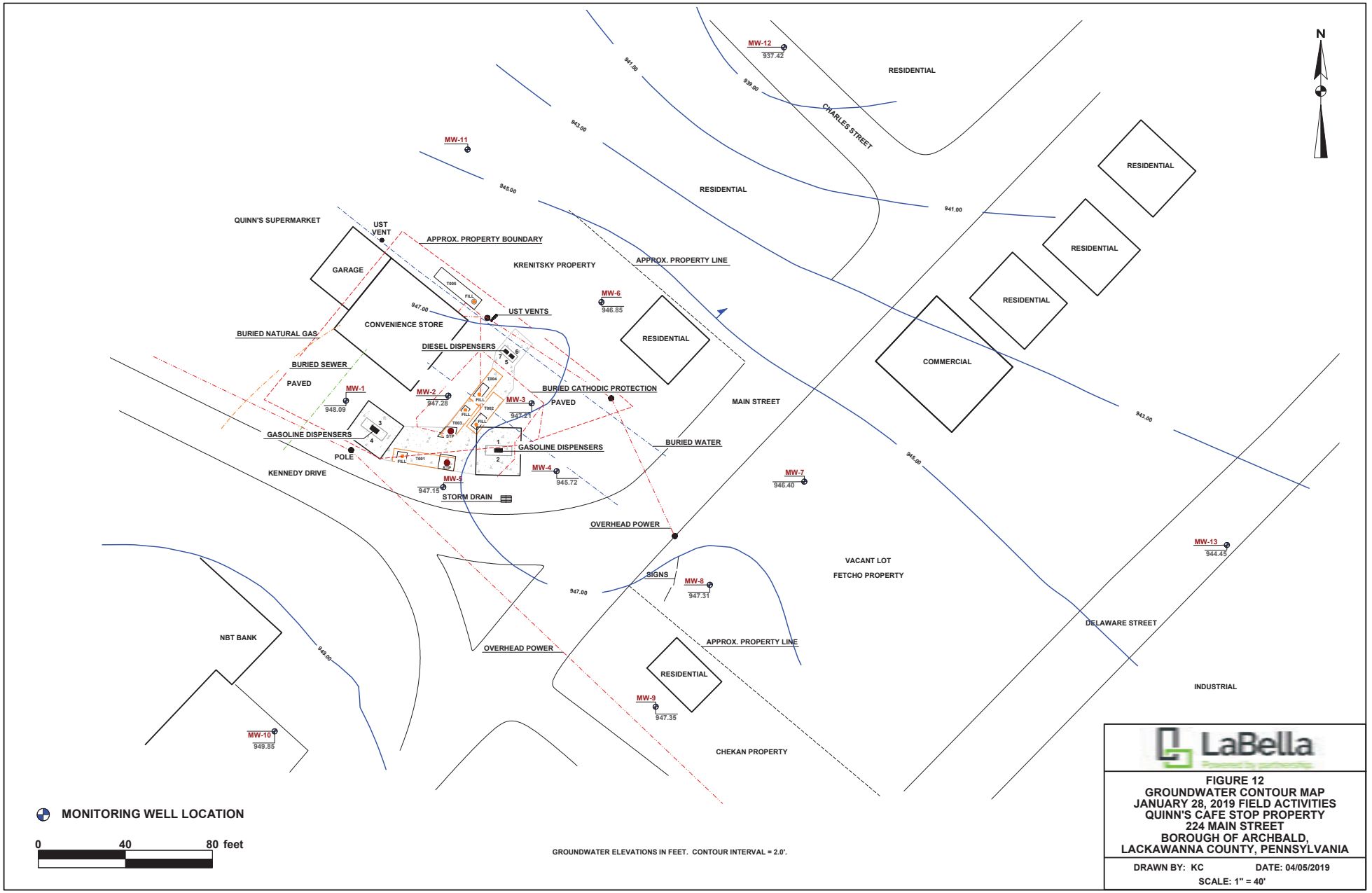


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**FIGURE 12**
**GROUNDWATER CONTOUR MAP**
**JANUARY 28, 2019 FIELD ACTIVITIES**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 04/05/2019
SCALE: 1" = 40'

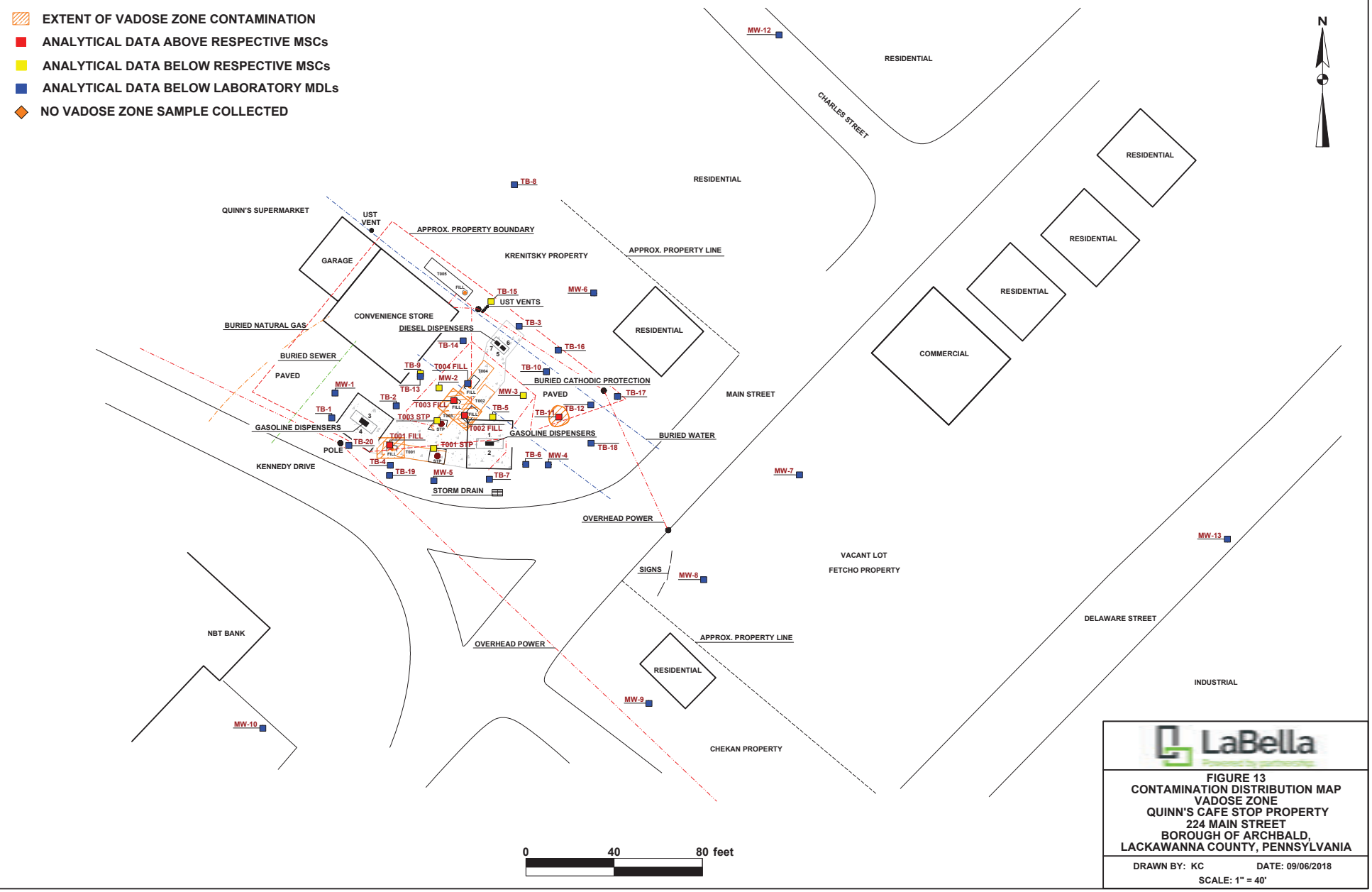


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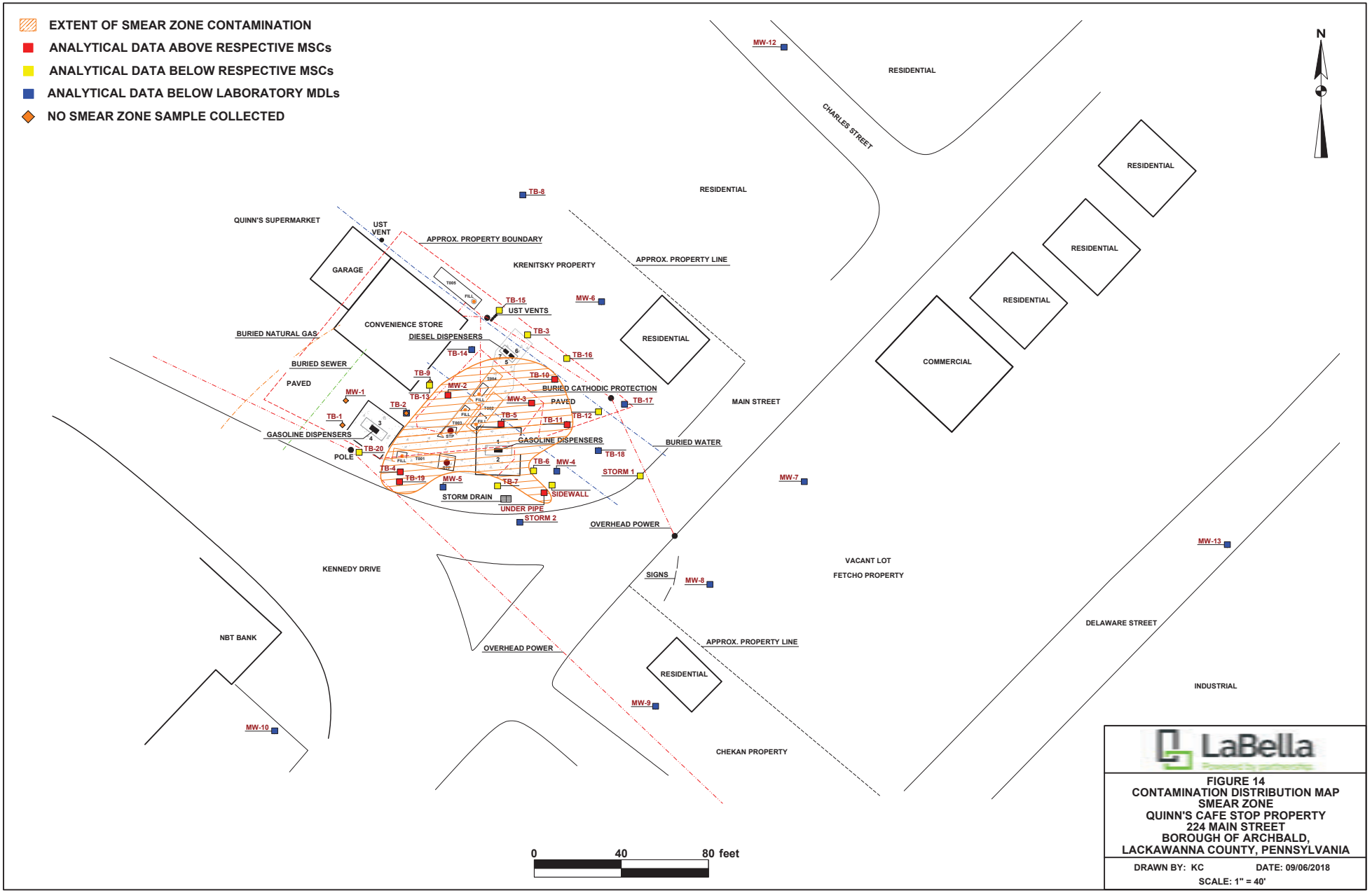
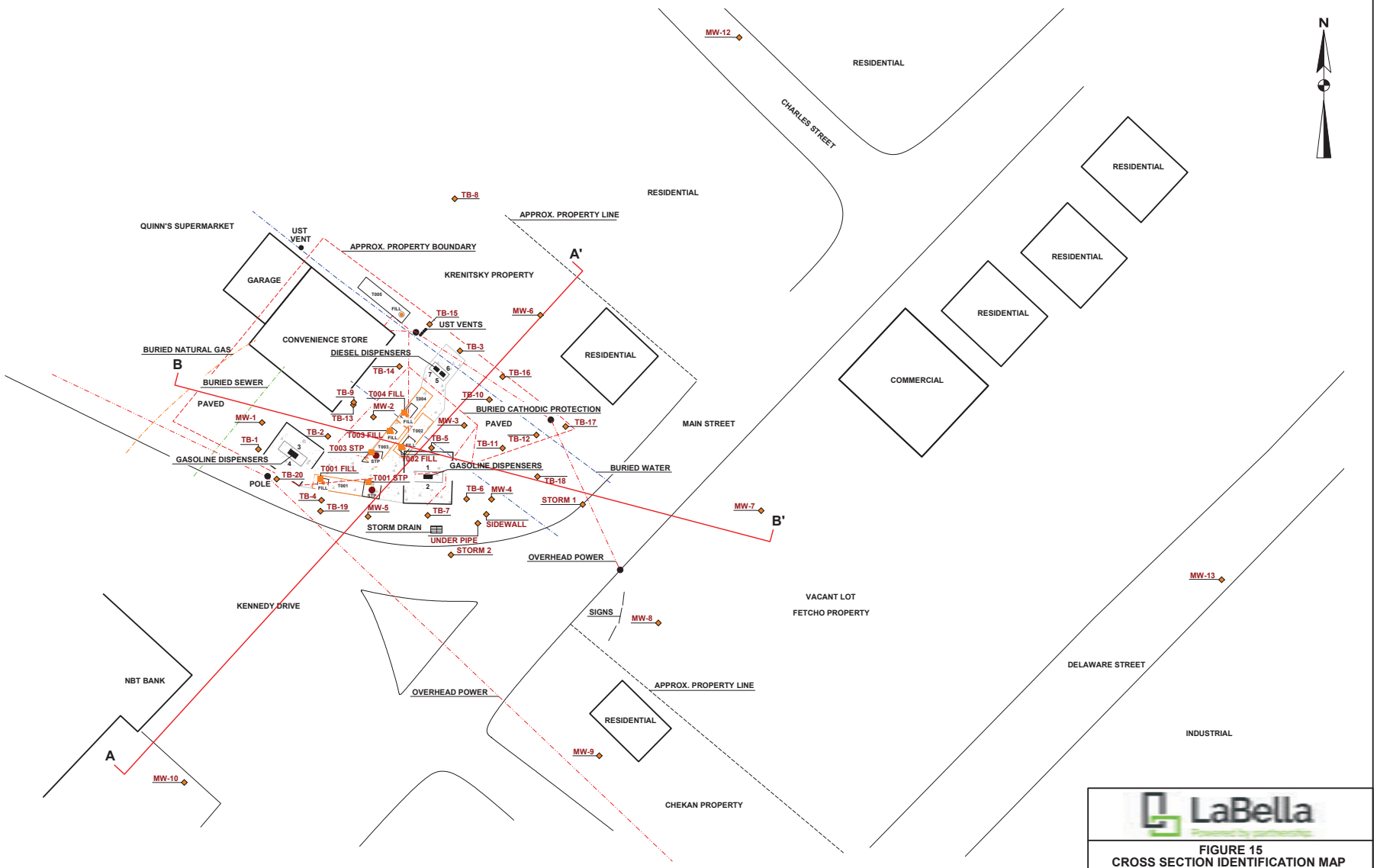
**FIGURE 13**
**CONTAMINATION DISTRIBUTION MAP**
**VADOSE ZONE**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 09/06/2018
SCALE: 1" = 40'

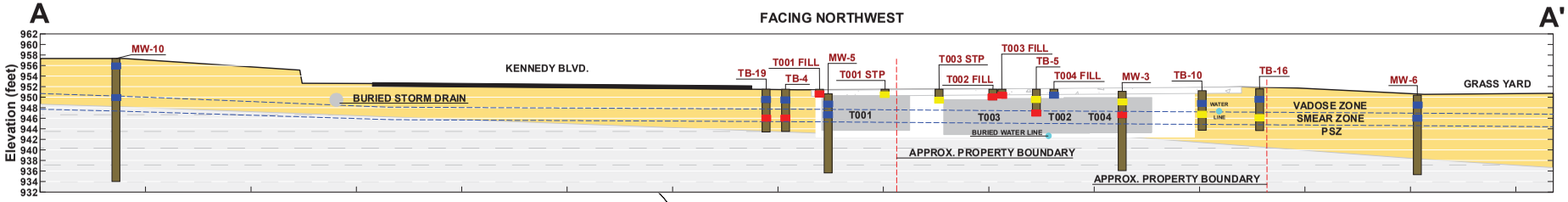

EXTENT OF SMEAR ZONE CONTAMINATION
ANALYTICAL DATA ABOVE RESPECTIVE MSCs
ANALYTICAL DATA BELOW RESPECTIVE MSCs
ANALYTICAL DATA BELOW LABORATORY MDLs
NO SMEAR ZONE SAMPLE COLLECTED
N
MW-12
RESIDENTIAL
CHARLES STREET
RESIDENTIAL
TB-8
RESIDENTIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
RESIDENTIAL
GARAGE
TB-15
UST VENTS
MW-6
CONVENIENCE STORE
DIESEL DISPENSERS
TB-3
BURIED NATURAL GAS
RESIDENTIAL
TB-14
TB-16
BURIED SEWER
TB-9
TB-10
PAVED
MW-2
BURIED CATHODIC PROTECTION
COMMERCIAL
MW-1
TB-13
MW-3
PAVED
TB-17
MAIN STREET
TB-2
TB-5
TB-12
TB-1
TB-11
GASOLINE DISPENSERS
GASOLINE DISPENSERS
BURIED WATER
TB-20
TB-18
POLE
TB-6
MW-4
TB-4
STORM 1
MW-7
TB-19
MW-5
TB-7
STORM DRAIN
SIDEWALL
UNDER PIPE
STORM 2
OVERHEAD POWER
MW-13
VACANT LOT
FETCHO PROPERTY
KENNEDY DRIVE
SIGNS
MW-8
DELAWARE STREET
NBT BANK
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
MW-10
CHEKAN PROPERTY
0
40
80 feet
LaBella
FIGURE 14
CONTAMINATION DISTRIBUTION MAP
SMEAR ZONE
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 09/06/2018
SCALE: 1" = 40'

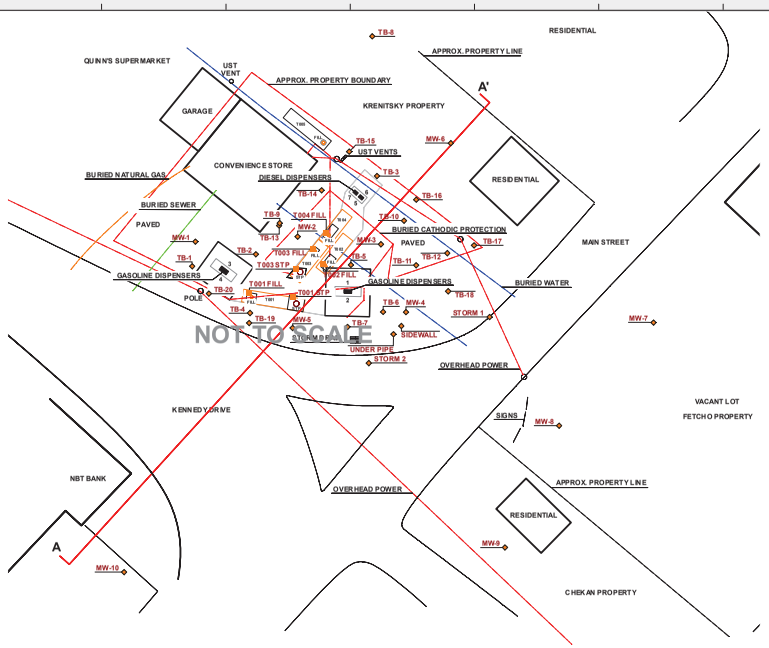



LaBella

**FIGURE 15**
**CROSS SECTION IDENTIFICATION MAP**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 09/06/2018
SCALE: 1" = 40'




N

- ANALYTICAL DATA ABOVE RESPECTIVE MSCs
- ANALYTICAL DATA BELOW RESPECTIVE MSCs
- ANALYTICAL DATA BELOW LABORATORY MDLs

0 20 40 feet

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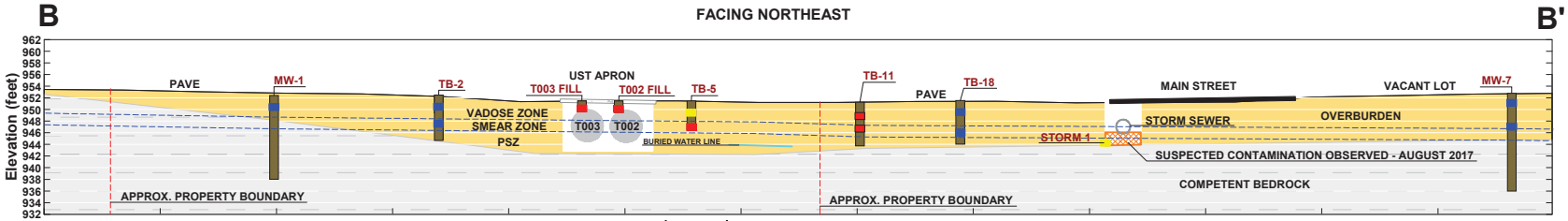
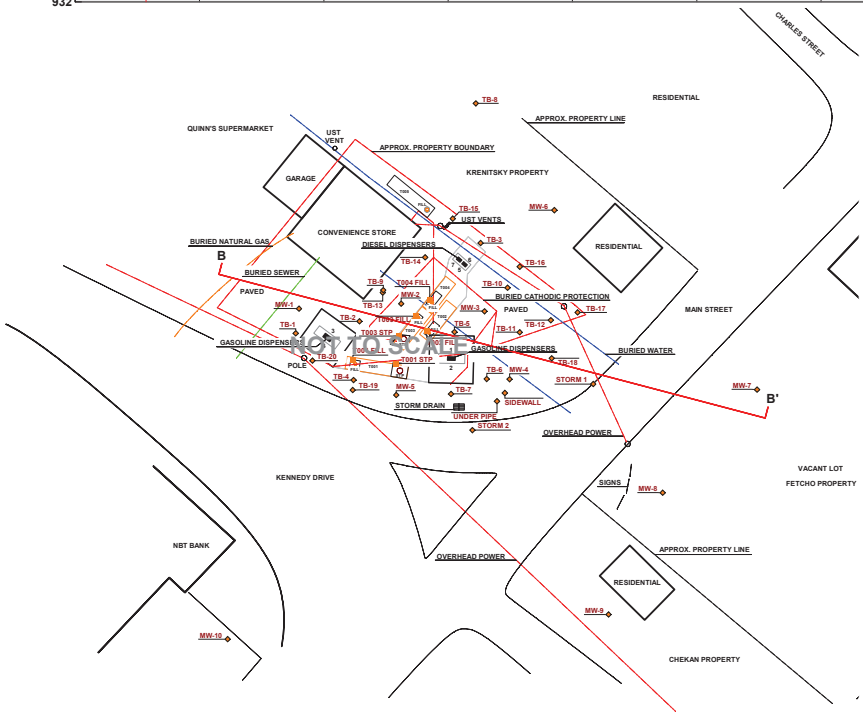
**FIGURE 16**
**CROSS SECTION A - A'**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 09/07/2018
HORIZONTAL SCALE: 1" = 20' (NO VERT. EXAGGERATION)




NOT TO SCALE

N

ANALYTICAL DATA ABOVE RESPECTIVE MSCs

ANALYTICAL DATA BELOW RESPECTIVE MSCs

ANALYTICAL DATA BELOW LABORATORY MDLs

0 20 40 feet

LaBella

**FIGURE 17**
**CROSS SECTION B - B'**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 09/07/2018
HORIZONTAL SCALE: 1" = 20' (NO VERT. EXAGGERATION)

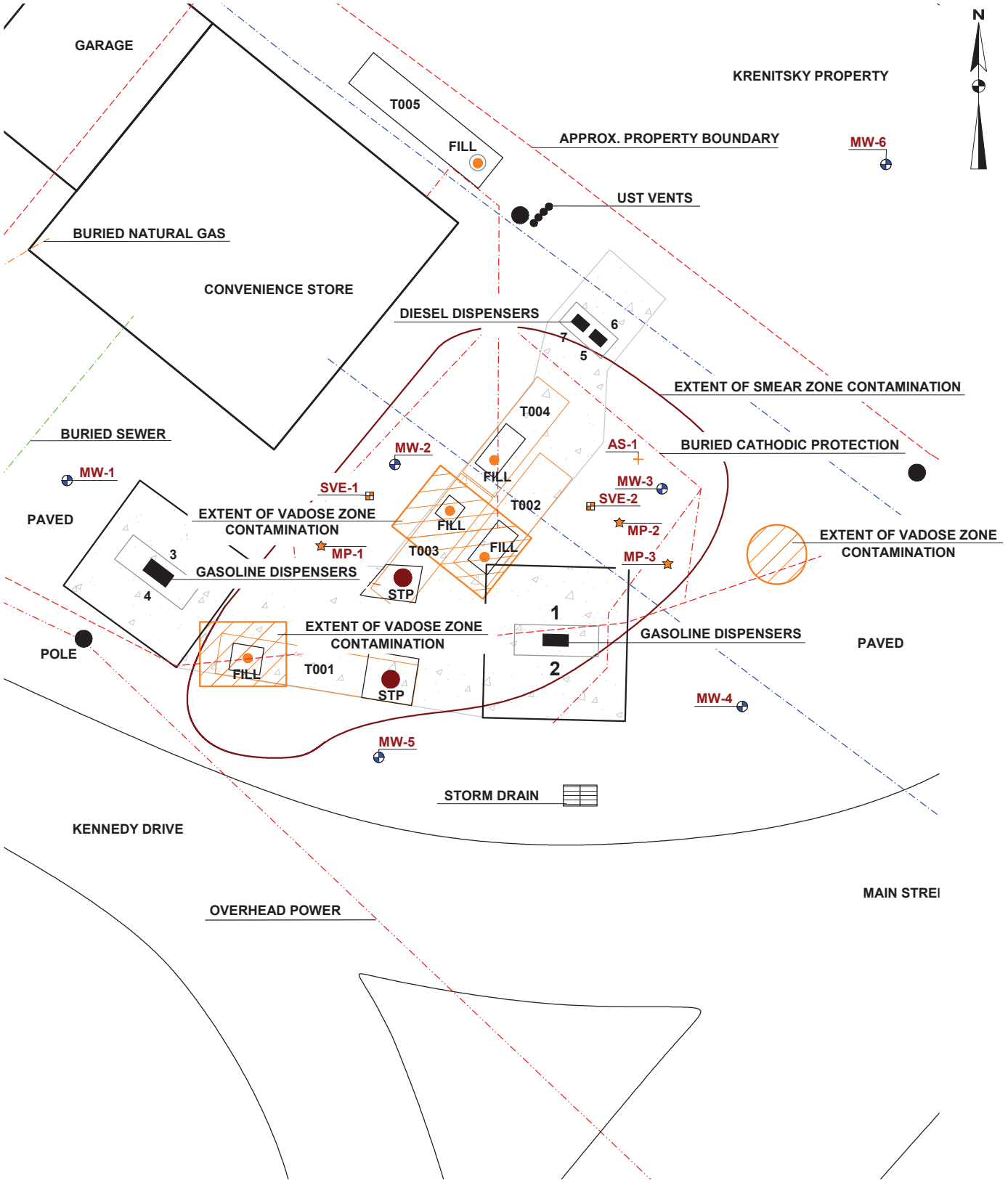



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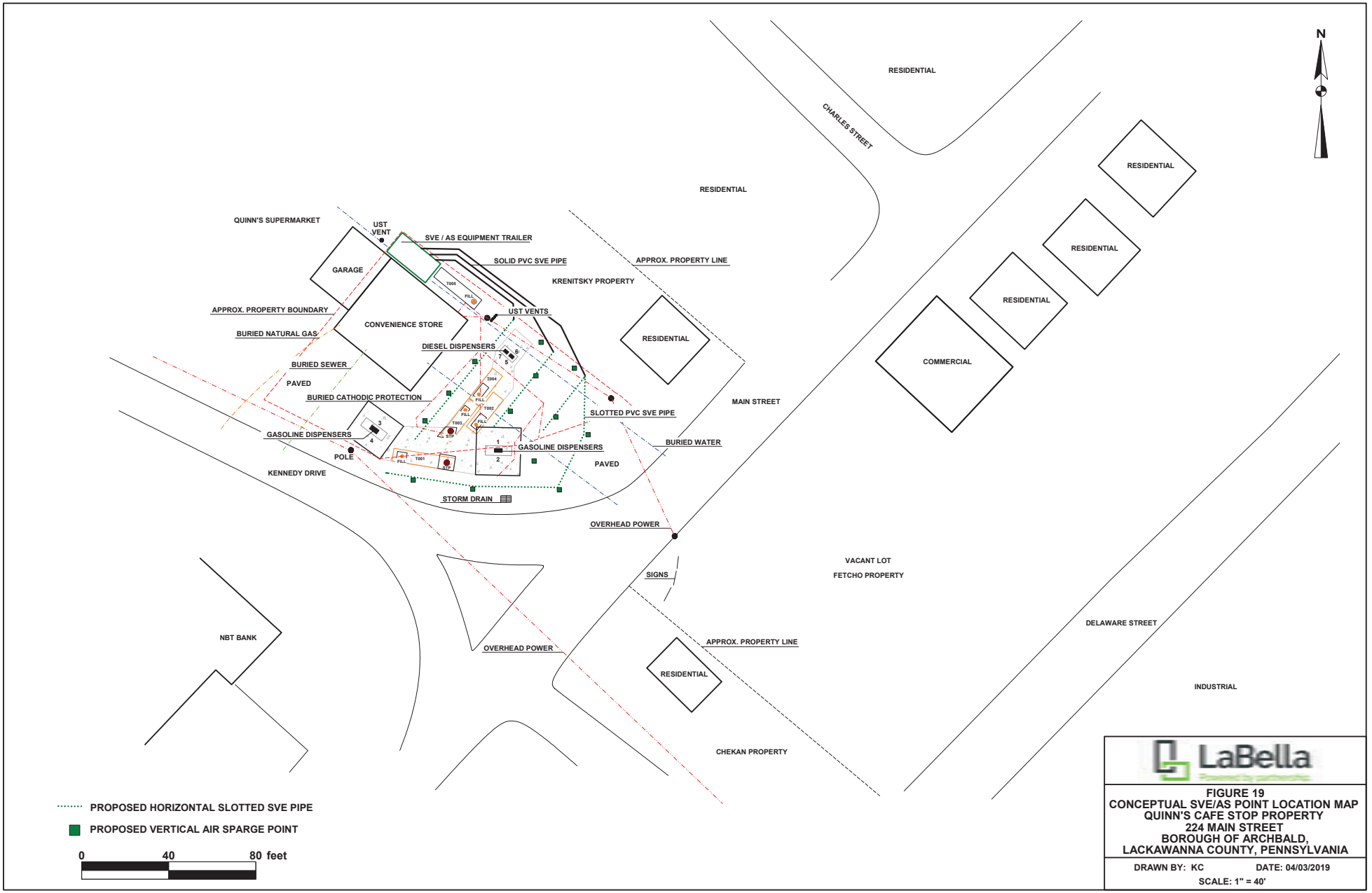
**FIGURE 18**
**PILOT TEST POINT LOCATION MAP**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 08/29/2018

SCALE: 1" = 20'




LaBella

**FIGURE 19**
**CONCEPTUAL SVE/AS POINT LOCATION MAP**
**QUINN'S CAFE STOP PROPERTY**
**224 MAIN STREET**
**BOROUGH OF ARCHBALD,**
**LACKAWANNA COUNTY, PENNSYLVANIA**

DRAWN BY: KC DATE: 04/03/2019
SCALE: 1" = 40'

# APPENDIX B

LaBella Associates Representative Resumes

# KEVIN CUCURA

## Environmental Analyst

Kevin has twelve years of experience in site assessments, site remediation, water quality and natural resource monitoring and management. He has worked on numerous environmental remediation/restoration projects. He has also served as Site Supervisor for underground storage tank removals, assessments, soil boring/ monitoring well installations and sampling programs.

### EDUCATION

**B.A. – Environmental Geology, Lock Haven University**

### CERTIFICATIONS/ REGISTRATIONS

**ASTM: Phase I and Phase II Environmental Site Assessments for Commercial Real Estate**

**Pennsylvania Department of Environmental Protection Certified UST Installer**

**OSHA 1910.120 Hazardous Waste Site Training: 40 Hour**

**Lackawanna River 2000 Program - Lackawanna River Basin in Northeast PA**

Kevin was Project Manager for this project which was an EPA funded watershed reclamation project involving acid mine drainage (AMD) and combined sewer overflows (CSO) identification and remediation, non-point source pollution control method applications, riverbank restoration, and water quality monitoring.

**US Army Corps of Engineer: Lackawanna River watershed - Northeast PA**

Kevin was Project Manager for a US Army Corps of Engineers funded project, aimed at assessing tributaries and their confluences in the upper Lackawanna River watershed in Northeast Pennsylvania. The project involved quantifying metal concentrations (Aluminum, Total Iron, Ferrous Iron and Manganese) versus flow and monitoring water quality in the Lackawanna River and its tributaries.

**Additional experience includes:**

Hazardous Waste Characterization And Remediation

Phase I And Phase II

Environmental Site Assessment

Test Borings And Monitoring

Well Installation Oversight And Sampling

Underground Storage Tank Compliance

Closure, Release Investigations

Watershed Monitoring

Remote And Real-Time Field Instrumentation Operation And Data Acquisition

GPS Surveying

Environmental Data Collection And Management

**Scott Fuel Stop, Inc: Scott Fuel Stop Property - Scott Township, PA**

Served as PADEP Certified Tank Handler (PADEP UMR 5585) during the removal of the diesel fuel supply lines and dispensers at the site. Roles included project planning, PADEP coordination, oversight of field activities, sample collection, determining applicable cleanup standards and final report preparation.

**Pump-n-Pantry, Inc.: Pump-n-Pantry #002 Property - Great Bend Township, PA**

Currently serving as project manager during ongoing site characterization and interim remedial activities

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at the site. Roles include client coordination, PADEP coordination, subcontractor coordination, obtaining access to off-site properties, mapping/ data presentation and report preparation.

**Community Bank, NA: Phillips Road Property - Springville, PA**

Served as project manager and site supervisor during the removal of a buried oil-water separator at the site. Roles included project planning, subcontractor coordination, oversight of field activities, sample collection, determining applicable cleanup standards, contaminated soil disposal and final report preparation.

**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**Bureau of Environmental Cleanup and Brownfields**
**Division of Storage Tanks**
**P.O. Box 8763**
**Harrisburg, PA 17105-8763**

# Company Certification Certificate

**This certification authorizes the below named company to employ certified installers and inspectors to perform certified activities on storage tanks regulated pursuant to the Storage Tank and Spill Prevention Act (35 P.S. Section 6021.101 et seq.). Individuals performing tank handling, tightness testing or inspection activities must also be certified by DEP in the appropriate certification category.**

## LABELLA ASSOCIATES P.C.

| | |
|---|---|
| **Certification Number** | **1875** |
| **DEP Client ID Number** | **301801** |

**Expiration Date:** **January 25, 2021**

Anne Toth

Anne Toth, Chief
Certification Unit

3930-FM-WC0042 Rev. 8/2005

# COMMONWEALTH OF PENNSYLVANIA
# DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS
DIVISION OF STORAGE TANKS
P.O. BOX 8763
HARRISBURG, PENNSYLVANIA 17105-8763

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

THIS CERTIFICATION AUTHORIZES THE BELOW NAMED INDIVIDUAL TO CONDUCT TANK HANDLING OR INSPECTION ACTIVITIES PURSUANT TO THE STORAGE TANK AND SPILL PREVENTION ACT, AND DEPARTMENT REGULATIONS AT TITLE 25 PA CODE CHAPTER 245 IN THE SPECIFIC CATEGORIES SHOWN.

| CATEGORIES | ISSUE DATE(S) | EXPIRATION DATE(S) |
|---|---|---|
| UMR ***** ***** ***** | 08/24/2010 | 08/24/2019 |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |

Anne Toth

Anne Toth, Chief
Certification Unit

ISSUED TO KEVIN M CUCURA
DEP CLIENT ID NUMBER 275081
CERTIFICATION NUMBER 5585

## WARNING

Special security measures are incorporated into this Certification Certificate and Identification Card. Any attempt to alter the information on these documents may be a violation of Pennsylvania law, including but not limited to 18 Pa. C.S.A. 4104 (relating to tampering with records or identification) and 18 Pa. C.S.A. 4911 (relating to tampering with public records and information).

Certified Companies employing the certified individual shown above may make a Photo Copy of the Certification Certificate for company records. The original certification documents shall be retained by the certified individual to whom they are issued unless otherwise directed by the Department.

## IMPORTANT INSTRUCTIONS

Carefully detach the Identification (ID) Card along perforated edges. Sign the ID Card on the reverse side and carry the ID Card at all times when performing certified activities. You must present (display) the ID Card upon request.

The ID Card may be covered or laminated with a clear plastic material **(after signing)** to protect it from deterioration.

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF STORAGE TANKS

INSTALLER/INSPECTOR CERTIFICATION NUMBER: 5585

ISSUED TO: KEVIN M CUCURA

| CATEGORIES | EXPIRATION DATE(S) |
|---|---|
| UMR ***** ***** ***** | 08/24/2019 |
| ***** ***** ***** ***** | ********** |
| ***** ***** ***** ***** | ********** |
| ***** ***** ***** ***** | ********** |
| ***** ***** ***** ***** | ********** |
| ***** ***** ***** ***** | ********** |

# MARTIN GILGALLON

## Regional Environmental Manager

Marty is our Regional Manager in Scranton, PA and has 28 years of experience in the environmental field, specializing in environmental assessment, water quality and waste stream treatment evaluation, site characterization, subsurface investigations, and remedial design/action. Marty has worked with a variety of clients including energy and utility clients, development corporations, and commercial and residential developers throughout the Mid-Atlantic region.

### PG

**Professional Geologist, PA**

### EDUCATION

**B.S. - Geosciences, Penn State University, 1987**

### ORGANIZATIONS

**Association of Groundwater Scientists and Engineers.**

**National Groundwater Association**

**The Geological Society of America**

**Lackawanna River Corridor Association**

### CERTIFICATIONS/ REGISTRATIONS

**Commonwealth of Pennsylvania Registered Professional Geologist**

**Pennsylvania Department of Environmental Protection Certified UST Installer**

**OSHA 1910.120 Hazardous Waste Site Training: 40 Hour and Annual 8 Hour**

**Lackawanna Watershed 2000 Program - Lackawanna River Basin in Northeastern PA**

Marty served as Project Manager for this program on the Lackawanna River Basin in Northeastern Pennsylvania. He previously served as Project Manager under the Strategic Environmental Research and Development Program (SERDP) in conjunction with the completion of watershed studies on the Lackawanna River Basin and the Winters Run River Basin at the Aberdeen Proving Ground in Harford County, Maryland. The associated Scopes of Work included:

Completion of the mapping of each basin utilizing GPS and GIS technologies.

Generation of channel morphology data utilizing traditional surveying methods.

Collection of wet chemistries to determine baseline chemical characteristics of each river system.

Collection of water quality data utilizing in-situ real-time data collection equipment pursuant to the development of the prototypes.

Pilot demonstrations for an environmental Monitoring and Management System (EMMS) under SERDP.

In each investigation, the real-time data was collected from the field stations utilizing cellular telephone technologies and downloaded, via modem, to a central data collection laboratory at the National Institute for Environmental Renewal (NIER) located in Mayfield, Lackawanna County, Pennsylvania.

As Project Manager, his responsibilities also included coordination with officials of the Army Environmental Center at the Aberdeen Proving Ground; completion of the collection of atmospheric data with field representatives of the Waterways Experimental Station (WES) in Vicksburg, Mississippi; and coordination with local, county and state regulators and authorities.

**Site Characterization**

Marty conducted evaluations of Publicly Owned Treatment Works (POTW) effluent characterization protocols relative to compliance with PA Clean Streams and US EPA Clean Water Act requirements, as they apply

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to receiving water limitations on quantities, rates, and concentrations of chemical and physical constituents.

**Dye Tracer Studies**

Marty also designed and implemented Dye Tracer studies for a variety of commercial and industrial clients, in order to determine the configuration of both sanitary and industrial piping systems. As part of a Design Study relative to a Groundwater Pump and Treat System, he evaluated the capability of a private Sewage Treatment Plant to process treated discharges from a hydrocarbon-contaminated wastestream. In support of Permit Applications for encroachments into wetlands, he prepared environmental assessment documentation regarding wetland aerial extent, value, function, adverse impacts and adverse environmental effect.

**Project Hydrogeologist**

As Project Hydrogeologist, Marty was responsible for the assessment of hydrologic and geologic conditions pertaining to project performance. Projects of note include the initiation and supervision of release investigations in conjunction with failed underground storage tank (UST) systems at numerous sites and UST Closures. These projects typically include the development of test boring and monitoring well networks and soil and groundwater sampling programs in order to discern migration pathways and the extent of potential contamination present at a facility. Marty's responsibilities included the design and implementation of remedial action plans to address soil and groundwater contamination; associated coordination with regulatory agencies; and the preparation of UST Closure Reports. Remedial action projects include: the design and implementation of vacuum extraction and remediation systems to address petroleum contaminated soil and groundwater; and pump and treat remedial systems to address petroleum impacted groundwater in deep, bedrock aquifers.

**Environmental Assessments**

As Project Manager for environmental assessments and site characterizations, responsibilities included the preparation of and adherence to site specific health and safety plans, performance of background reviews and field investigations, oversight of field technicians, data review, and reporting. Projects of note include: the remedial investigation/feasibility study of a 120 acre industrial facility contaminated with various petroleum hydrocarbons, volatile organics and PCBs; hydrogeological study and quarterly monitoring of an abandoned industrial site contaminated with 1,1,1 Trichloroethane; geophysical documents review; and Phase I and Phase II environmental site assessments of commercial and industrial facilities.

**Geologist**

As Staff Geologist, Marty's duties included the design of groundwater monitoring systems for landfills and UST systems. Marty was responsible for the installation of test borings and construction of groundwater monitoring wells, and the development and implementation of soil and aqueous sampling programs. He was also responsible for environmental site assessments and geotechnical investigations in conjunction with building design and construction, and report preparation. Projects of note include the hydrogeological investigation including project and client coordination for a US Environmental Protection Agency Superfund Site in New Jersey; and numerous geologic investigations for both government agencies and private corporations.

3930-FM-WC0042 Rev. 8/2005

# COMMONWEALTH OF PENNSYLVANIA
# DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS
DIVISION OF STORAGE TANKS
P.O. BOX 8763
HARRISBURG, PENNSYLVANIA 17105-8763

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

THIS CERTIFICATION AUTHORIZES THE BELOW NAMED INDIVIDUAL TO CONDUCT TANK HANDLING OR INSPECTION ACTIVITIES PURSUANT TO THE STORAGE TANK AND SPILL PREVENTION ACT, AND DEPARTMENT REGULATIONS AT TITLE 25 PA CODE CHAPTER 245 IN THE SPECIFIC CATEGORIES SHOWN.

| CATEGORIES | ISSUE DATE(S) | EXPIRATION DATE(S) |
|---|---|---|
| UMR ***** ***** ***** | 05/07/2012 | 05/07/2021 |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |
| ***** ***** ***** ***** | ********** | ********** |

Anne Toth

Anne Toth, Chief
Certification Unit

**ISSUED TO** MARTIN P GILGALLON

**DEP CLIENT ID NUMBER** 181651

**CERTIFICATION NUMBER** 4294

DISPLAY THIS CERTIFICATE PROMINENTLY • NOTIFY AGENCY WITHIN 10 DAYS OF ANY CHANGE

**Commonwealth of Pennsylvania**
**Department of State**
**Bureau of Professional and Occupational Affairs**
**PO BOX 2649 Harrisburg PA 17105-2649**

18 0062841

**License Type**
**Professional Geologist**

**MARTIN PATRICK GILGALLON**
**18 Old Mill Road**
**Jermyn PA 18433**

**License Status**
**Active**

**Initial License Date**
**05/02/1994**

**Expiration Date**
**09/30/2019**

**License Number**
**PG000639G**

Commissioner of Professional and Occupational Affairs

Signature

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# APPENDIX C

## Historical Groundwater Analytical Data Tables

**Table C-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Summary of Groundwater Analytical Data (ug/l)**
**Groundwater Monitoring Wells**

| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 5 | 700 | 840 | 20 | 100 | 1,000 | 10,000 | 15 | 420 |
| MW-1 | 2/15/2017 | 952.41 | 4.00 | 948.41 | 0.00 | Characterization | 3.9 | 4.9 | 2.8 | <1.0 | 4.5 | 1.8 | 12.6 | 21.6 | 10.0 |
| | 6/27/2017 | 952.41 | 4.46 | 947.95 | 0.00 | Characterization | 3.2 | 1.5 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | 2.8 | <1.0 |
| | 9/11/2017 | 952.41 | 3.98 | 948.43 | 0.00 | Characterization | 2.3 | 2.3 | <1.0 | <1.0 | <2.0 | 1.1 | <3.0 | 7.0 | 1.7 |
| | 11/30/2017 | 952.41 | 5.45 | 946.96 | 0.00 | Characterization | 1.3 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | 1.3 | <1.0 |
| | 1/23/2018 | 952.41 | 5.53 | 946.88 | 0.00 | Characterization | <1.0 | <1.0 | 1.7 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/10/2018 | 952.41 | 4.92 | 947.49 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| Screened Interval: | 7/10/2018 | 952.41 | 5.21 | 947.20 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| 2.73' - 14.73' | 10/9/2018 | 952.41 | 4.03 | 948.38 | 0.00 | Characterization | 1.1 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| Total Depth: | 1/29/2019 | 952.41 | 4.32 | 948.09 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | 1.0 | <1.0 |
| 14.73' | | | | | | | | | | | | | | | |
| MW-2 | 2/15/2017 | 951.84 | 4.41 | 947.43 | Trace | Characterization | 82.7 | 342 | 49.3 | <5.0 | 158 | 26.1 | 298 | 132 | 26.8 |
| | 6/28/2017 | 951.84 | 4.91 | 946.93 | Trace | Characterization | 85.4 | 324 | 45.2 | <5.0 | 217 | 22.7 | 254 | 120 | 26.0 |
| | 9/11/2017 | 951.84 | 4.30 | 947.54 | 0.00 | Characterization | 82.5 | 462 | 55.2 | <5.0 | 181 | 31.0 | 374 | 243 | 56.7 |
| | 12/1/2017 | 951.84 | 5.39 | 946.45 | 0.00 | Characterization | 69.5 | 291 | 49.2 | <5.0 | 169 | 23.0 | 157 | 54 | 13.6 |
| | 1/23/2018 | 951.84 | 5.43 | 946.41 | 0.00 | Characterization | 50.5 | 192 | 44.5 | <5.0 | 125 | 14.1 | 99.9 | 30.5 | 7.1 |
| | 4/10/2018 | 951.84 | 4.80 | 947.04 | 0.00 | Characterization | 46.6 | 248 | 41.2 | <5.0 | 95.7 | 19.4 | 159 | 43.5 | 8.1 |
| Screened Interval: | 7/10/2018 | 951.84 | 5.39 | 946.45 | 0.00 | Characterization | 77.2 | 190 | 41.0 | <5.0 | 130 | 18.7 | 115 | 38.0 | 6.7 |
| 2.84' - 14.84' | 10/9/2018 | 951.84 | 4.41 | 947.43 | 0.00 | Characterization | 79.6 | 291 | 47.8 | <5.0 | 139 | 24.3 | 166 | 51.1 | 9.8 |
| Total Depth: | 1/29/2019 | 951.84 | 4.56 | 947.28 | 0.00 | Characterization | 41.0 | 178 | 44.5 | <5.0 | 135 | 13.7 | 117 | 35.8 | 7.6 |
| 14.84' | | | | | | | | | | | | | | | |
| MW-3 | 2/15/2017 | 951.10 | 3.70 | 947.40 | 0.00 | Characterization | 376 | 62.2 | 6.1 | 15.0 | 14.4 | 535 | 236 | 75.6 | 24.2 |
| | 6/27/2017 | 951.10 | 4.63 | 946.47 | 0.00 | Characterization | 583 | 1210 | 98.6 | 57.7 | 545 | 44.1 | 1460 | 830 | 72.9 |
| | 9/11/2017 | 951.10 | 3.73 | 947.37 | 0.00 | Characterization | 208 | 13.1 | 6.7 | 9.6 | 15.7 | <5.0 | <15.0 | 15.9 | <5.0 |
| | 12/1/2017 | 951.10 | 5.28 | 945.82 | 0.00 | Characterization | 679 | 1080 | 124.0 | 40.3 | 520 | 44 | 696 | 309 | <5.0 |
| | 1/23/2018 | 951.10 | 5.18 | 945.92 | 0.00 | Characterization | 585 | 1110 | 90.1 | 47.1 | 243 | 42 | 344 | 49 | <25.0 |
| | 4/10/2018 | 951.10 | 4.29 | 946.81 | 0.00 | Characterization | 277 | 425 | 34.0 | 11.7 | 79.9 | 20.8 | 349 | 195 | <5.0 |
| Screened Interval: | 7/10/2018 | 951.10 | 4.98 | 946.12 | 0.00 | Characterization | 670 | 1160 | 94.1 | 74.9 | 394 | 43.2 | 553 | 176 | 18.9 |
| 3.48' - 15.48' | 10/9/2018 | 951.10 | 3.78 | 947.32 | 0.00 | Characterization | 98.7 | 73.4 | 15.7 | 7.0 | 14.8 | 3.3 | 41.9 | 34.1 | 2.0 |
| Total Depth: | 1/29/2019 | 951.10 | 3.89 | 947.21 | 0.00 | Characterization | 80.3 | 151 | 16.4 | 6.0 | 33.7 | 4.2 | 45.5 | 22.8 | 1.7 |
| 15.48' | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

PA Act 2 Statewide Health Standards for Residential Used Aquifer TDS <2,500 mg/l setting

Shaded values indicate Act 2 Statewide Health Standard exceedances

Notes:
1.) Screened Interval and Total Depth measurements from grade
2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

**Table C-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Summary of Groundwater Analytical Data (ug/l)**
**Groundwater Monitoring Wells**

| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 5 | 700 | 840 | 20 | 100 | 1,000 | 10,000 | 15 | 420 |
| **MW-4** | 2/15/2017 | 950.71 | 4.44 | 946.27 | 0.00 | Characterization | 49 | **6.1** | **2.7** | 189 | **3.1** | **7.1** | **19.5** | **5.9** | **2.8** |
| | 6/28/2017 | 950.71 | 4.88 | 945.83 | 0.00 | Characterization | 128 | **5.6** | **6.7** | 280 | **8.6** | **6.2** | **12.3** | **3.9** | <1.0 |
| | 9/11/2017 | 950.71 | 5.15 | 945.56 | 0.00 | Characterization | 37.6 | <1.0 | **3.4** | 315 | **3.4** | <1.0 | **3.2** | <1.0 | <1.0 |
| | 12/1/2017 | 950.71 | 5.24 | 945.47 | 0.00 | Characterization | <5.0 | <5.0 | <5.0 | 306 | <10.0 | <5.0 | <15.0 | <5.0 | <5.0 |
| | 1/23/2018 | 950.71 | 5.32 | 945.39 | 0.00 | Characterization | 9.5 | <5.0 | <5.0 | 234 | <10.0 | <5.0 | <15.0 | <5.0 | <5.0 |
| | 4/10/2018 | 950.71 | 5.21 | 945.50 | 0.00 | Characterization | 38.0 | **9.9** | <5.0 | 218 | <10.0 | <5.0 | <15.0 | <5.0 | <5.0 |
| **Screened Interval:** | 7/10/2018 | 950.71 | 5.30 | 945.41 | 0.00 | Characterization | 11.6 | <5.0 | <5.0 | 225 | <10.0 | <5.0 | <15.0 | <5.0 | <5.0 |
| **3.26' - 15.26'** | 10/9/2018 | 950.71 | 4.99 | 945.72 | 0.00 | Characterization | 17.0 | <5.0 | <5.0 | 297 | <10.0 | <5.0 | <15.0 | <5.0 | <5.0 |
| **Total Depth:** | 1/29/2019 | 950.71 | 4.99 | 945.72 | 0.00 | Characterization | 63.9 | **11.7** | **6.6** | 199 | **5.6** | **1.7** | **17.0** | **5.5** | <1.0 |
| **15.26'** | | | | | | | | | | | | | | | |
| **MW-5** | 2/15/2017 | 950.65 | 3.34 | 947.31 | 0.00 | Characterization | 162 | 854 | **116** | **6.1** | 294 | **46.2** | **843** | 1130 | **59.9** |
| | 6/28/2017 | 950.65 | 4.78 | 945.87 | 0.00 | Characterization | 227 | **475** | **76.1** | **6.7** | 235 | **71.9** | **487** | 707 | **40.9** |
| | 9/11/2017 | 950.65 | 3.32 | 947.33 | 0.00 | Characterization | 330 | **610** | **82.0** | **10.3** | 210 | **41.7** | **528** | 646 | **43.4** |
| | 12/1/2017 | 950.65 | 4.28 | 946.37 | 0.00 | Characterization | 209 | **422** | **57.5** | <5.0 | 249 | **30.0** | **313** | 353 | **32.6** |
| | 1/23/2018 | 950.65 | 4.28 | 946.37 | 0.00 | Characterization | 133 | **415** | **65.3** | <5.0 | 134 | **22.0** | **289** | 330 | **22.1** |
| | 4/10/2018 | 950.65 | 3.68 | 946.97 | 0.00 | Characterization | 468 | **591** | **81.6** | <5.0 | 164 | **29.6** | **586** | 766 | <5.0 |
| **Screened Interval:** | 7/10/2018 | 950.65 | 4.28 | 946.37 | 0.00 | Characterization | 264 | **282** | **38.4** | **11.3** | 109 | **6.9** | **251** | 373 | <5.0 |
| **3.50' - 15.50'** | 10/9/2018 | 950.65 | 3.54 | 947.11 | 0.00 | Characterization | 158 | **567** | **100** | <5.0 | 197 | **21.9** | **378** | 503 | 36.4 |
| **Total Depth:** | 1/29/2019 | 950.65 | 3.50 | 947.15 | 0.00 | Characterization | 66.9 | **429** | **80.4** | <5.0 | 122 | **16.4** | **335** | 407 | 27.7 |
| **15.50'** | | | | | | | | | | | | | | | |
| **MW-6** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/27/2017 | 950.38 | 4.27 | 946.11 | 0.00 | Characterization | 13.1 | **1.3** | **3.7** | 20.7 | **2.8** | <1.0 | <3.0 | <1.0 | <1.0 |
| | 9/11/2017 | 950.38 | 3.64 | 946.74 | 0.00 | Characterization | 5.9 | <1.0 | **3.3** | **11.4** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 12/1/2017 | 950.38 | 4.71 | 945.67 | 0.00 | Characterization | 6.0 | <1.0 | **3.4** | **6.0** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/23/2018 | 950.38 | 2.94 | 947.44 | 0.00 | Characterization | <1.0 | <1.0 | **1.4** | **4.1** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/10/2018 | 950.38 | 3.94 | 946.44 | 0.00 | Characterization | **4.1** | <1.0 | **1.4** | **4.6** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/10/2018 | 950.38 | 4.78 | 945.60 | 0.00 | Characterization | 6.9 | <1.0 | **3.0** | **10.9** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.25' - 15.25'** | 10/9/2018 | 950.38 | 3.55 | 946.83 | 0.00 | Characterization | **1.6** | <1.0 | **1.9** | **7.0** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/29/2019 | 950.38 | 3.53 | 946.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.3** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **15.25'** | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

PA Act 2 Statewide Health Standards for Residential Used Aquifer TDS <2,500 mg/l setting

Shaded values indicate Act 2 Statewide Health Standard exceedances

Notes:
1.) Screened Interval and Total Depth measurements from grade
2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

**Table C-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Summary of Groundwater Analytical Data (ug/l)**
**Groundwater Monitoring Wells**

| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 5 | 700 | 840 | 20 | 100 | 1,000 | 10,000 | 15 | 420 |
| **MW-7** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/27/2017 | 952.77 | 7.49 | 945.28 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 9/11/2017 | 952.77 | 7.23 | 945.54 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 12/1/2017 | 952.77 | 7.71 | 945.06 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 952.77 | 7.58 | 945.19 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 952.77 | 7.14 | 945.63 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 952.77 | 7.78 | 944.99 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.10' - 17.10'** | 10/9/2018 | 952.77 | 6.68 | 946.09 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 952.77 | 6.37 | 946.40 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **17.10'** | | | | | | | | | | | | | | | |
| **MW-8** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/27/2017 | 951.98 | 6.27 | 945.71 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 9/11/2017 | 951.98 | 5.02 | 946.96 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 11/30/2017 | 951.98 | 6.05 | 945.93 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 951.98 | 6.05 | 945.93 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 951.98 | 5.13 | 946.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 951.98 | 6.66 | 945.32 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.56' - 17.56'** | 10/8/2018 | 951.98 | 4.54 | 947.44 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 951.98 | 4.67 | 947.31 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **17.56'** | | | | | | | | | | | | | | | |
| **MW-9** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/27/2017 | 951.73 | 6.12 | 945.61 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 9/11/2017 | 951.73 | 5.05 | 946.68 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 11/30/2017 | 951.73 | 6.04 | 945.69 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 951.73 | 5.97 | 945.76 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 951.73 | 5.04 | 946.69 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 951.73 | 6.48 | 945.25 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.17' - 17.17'** | 10/8/2018 | 951.73 | 4.58 | 947.15 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 951.73 | 4.38 | 947.35 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **17.17'** | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

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Shaded values indicate Act 2 Statewide Health Standard exceedances

Notes:
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2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

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**Site Characterization Activities**
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**Summary of Groundwater Analytical Data (ug/l)**
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| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **5** | **700** | **840** | **20** | **100** | **1,000** | **10,000** | **15** | **420** |
| **MW-10** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | 957.32 | 15.32 | 942.00 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 9/11/2017 | 957.32 | 8.17 | 949.15 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 12/1/2017 | 957.32 | 9.47 | 947.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/23/2018 | 957.32 | 8.43 | 948.89 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/10/2018 | 957.32 | 8.03 | 949.29 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/10/2018 | 957.32 | 9.76 | 947.56 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.89' - 23.89'** | 10/9/2018 | 957.32 | 7.58 | 949.74 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/29/2019 | 957.32 | 7.47 | 949.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **23.89'** | | | | | | | | | | | | | | | |
| **MW-11** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 12/1/2017 | 953.36 | 6.26 | 947.10 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 953.36 | 5.80 | 947.56 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 953.36 | 4.66 | 948.70 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.2** | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 953.36 | 6.78 | 946.58 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **3.03' - 17.03'** | 10/8/2018 | 953.36 | 4.51 | 948.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 953.36 | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **23.89'** | | | | | | | | | | | | | | | |
| **MW-12** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 12/1/2017 | 941.59 | 5.99 | 935.60 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.4** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 941.59 | 5.74 | 935.85 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.5** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 941.59 | 4.95 | 936.64 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 941.59 | 6.53 | 935.06 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.2** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **2.57' - 19.57'** | 10/8/2018 | 941.59 | 4.55 | 937.04 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.4** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 941.59 | 4.17 | 937.42 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | **1.8** | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **19.57'** | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

PA Act 2 Statewide Health Standards for Residential Used Aquifer TDS <2,500 mg/l setting

Shaded values indicate Act 2 Statewide Health Standard exceedances

Notes:
1.) Screened Interval and Total Depth measurements from grade
2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

03/29/19

**Table C-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Summary of Groundwater Analytical Data (ug/l)**
**Groundwater Monitoring Wells**

| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **5** | **700** | **840** | **20** | **100** | **1,000** | **10,000** | **15** | **420** |
| **MW-13** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 11/30/2017 | 954.76 | 13.54 | 941.22 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.0** | <3.0 | <1.0 | <1.0 |
| | 1/22/2018 | 954.76 | 12.63 | 942.13 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| | 4/9/2018 | 954.76 | 10.93 | 943.83 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Screened Interval:** | 7/9/2018 | 954.76 | 12.59 | 942.17 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **2.64' - 16.64'** | 10/8/2018 | 954.76 | 10.66 | 944.10 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **Total Depth:** | 1/28/2019 | 954.76 | 10.31 | 944.45 | 0.00 | Characterization | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 |
| **16.64'** | | | | | | | | | | | | | | | |
| **AS-1** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 12/1/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 1/22/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 4/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Screened Interval:** | 7/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **0.00' - 00.00'** | 10/8/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Total Depth:** | 1/28/2019 | | 6.63 | -6.63 | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **00.00'** | | | | | | | | | | | | | | | |
| **MP-2** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 12/1/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 1/22/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 4/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Screened Interval:** | 7/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **0.00' - 00.00'** | 10/8/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Total Depth:** | 1/28/2019 | NM | 3.76 | NA | 0.00 | Characterization | 353 | **442** | **52.0** | 446 | 120 | **21.4** | **561** | 298 | **17.3** |
| **00.00'** | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

PA Act 2 Statewide Health Standards for Residential Used Aquifer TDS <2,500 mg/l setting

Shaded values indicate Act 2 Statewide Health Standard exceedances

Notes:
1.) Screened Interval and Total Depth measurements from grade
2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

**Table C-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Summary of Groundwater Analytical Data (ug/l)**
**Groundwater Monitoring Wells**

| Well Number | Date Sampled | Well Head Elevation (feet) | Depth to Groundwater (feet)* | Relative Groundwater Elevation (feet) | Product Thickness (feet) | Remediation Status | Benzene (ug/L) | Ethylbenzene (ug/L) | Cumene (ug/l) | MTBE (ug/L) | Naphthalene (ug/L) | Toluene (ug/L) | Xylenes (ug/L) | 1,2,4-TMB (ug/L) | 1,3,5-TMB (ug/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **5** | **700** | **840** | **20** | **100** | **1,000** | **10,000** | **15** | **420** |
| **MP-3** | 2/15/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 6/28/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 9/11/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 12/1/2017 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 1/22/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 4/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Screened Interval:** | 7/9/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **0.00' - 00.00'** | 10/8/2018 | NM | NM | NM | 0.00 | Characterization | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Total Depth:** | 1/28/2019 | NM | 3.85 | NA | 0.00 | Characterization | 533 | **670** | **80.1** | 156 | 125 | **121** | **949** | 239 | **44.3** |
| **00.00'** | | | | | | | | | | | | | | | |

**NM** Not Measured
**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

**NS** Not Sampled
**NA** Not Applicable
**E** Estimated Value

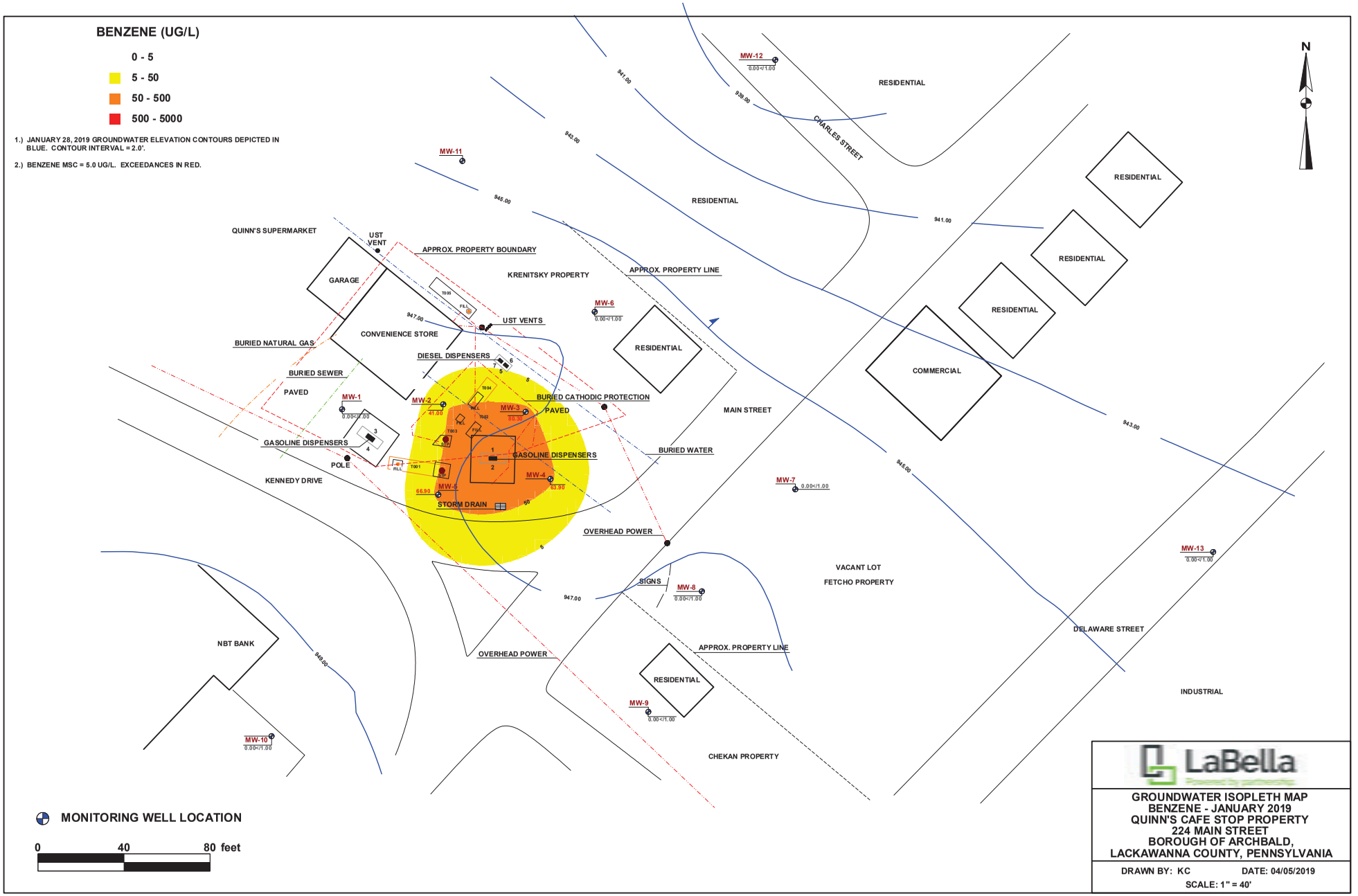
PA Act 2 Statewide Health Standards for Residential Used Aquifer TDS <2,500 mg/l setting

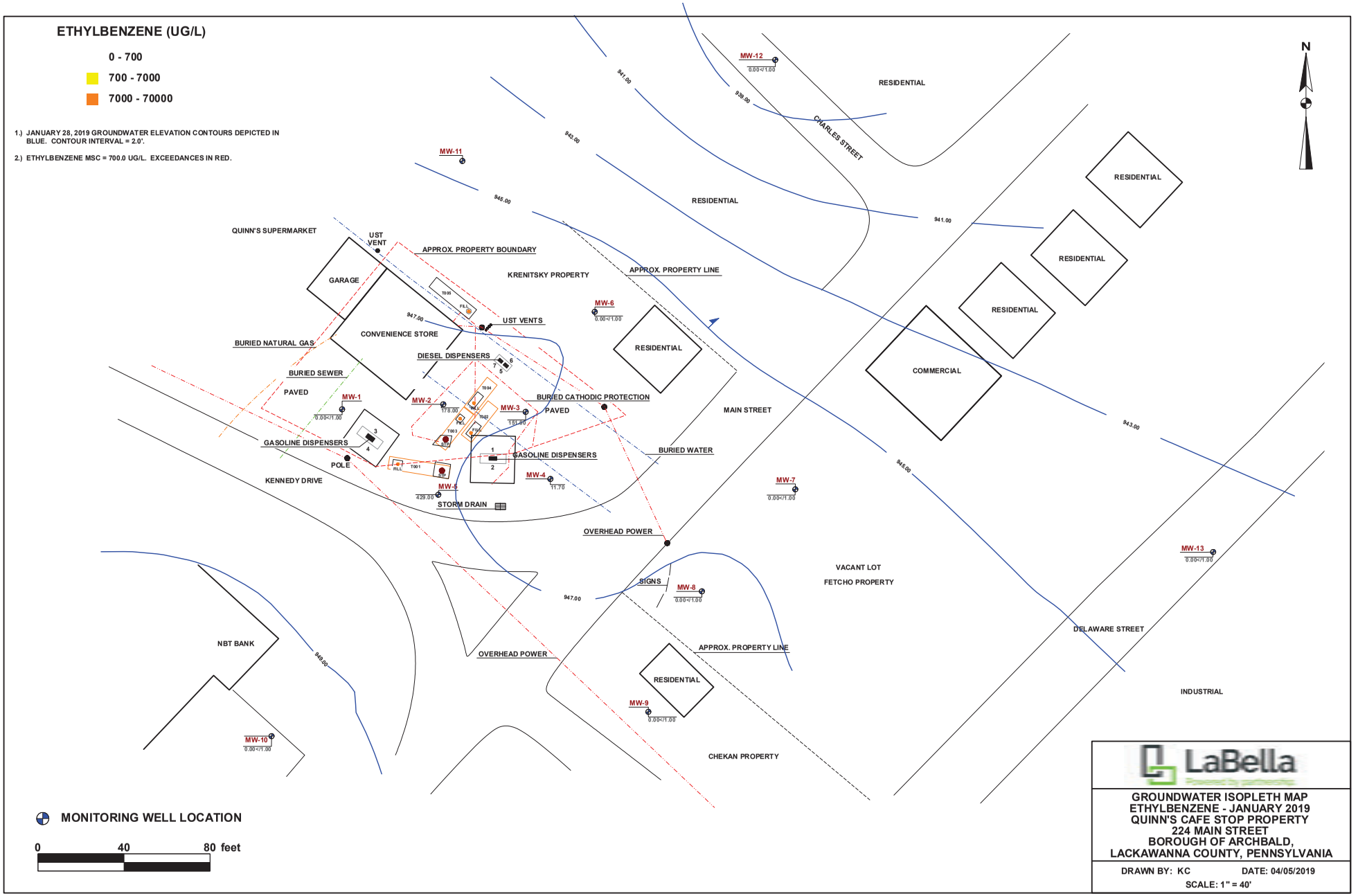
Shaded values indicate Act 2 Statewide Health Standard exceedances

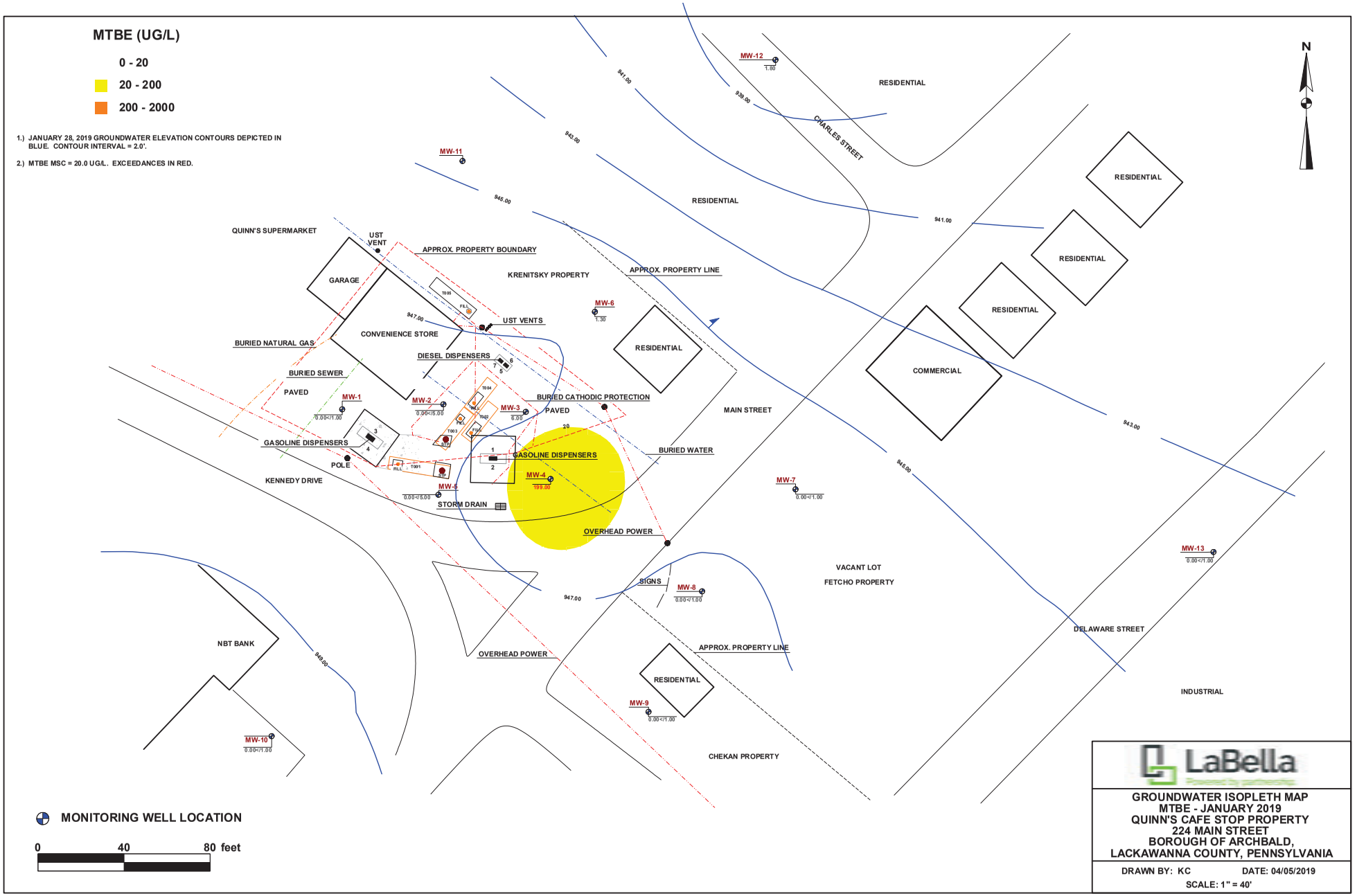
Notes:
1.) Screened Interval and Total Depth measurements from grade
2.) Well Head Eleavation and Depth to Groundwater measured from Top of Casing

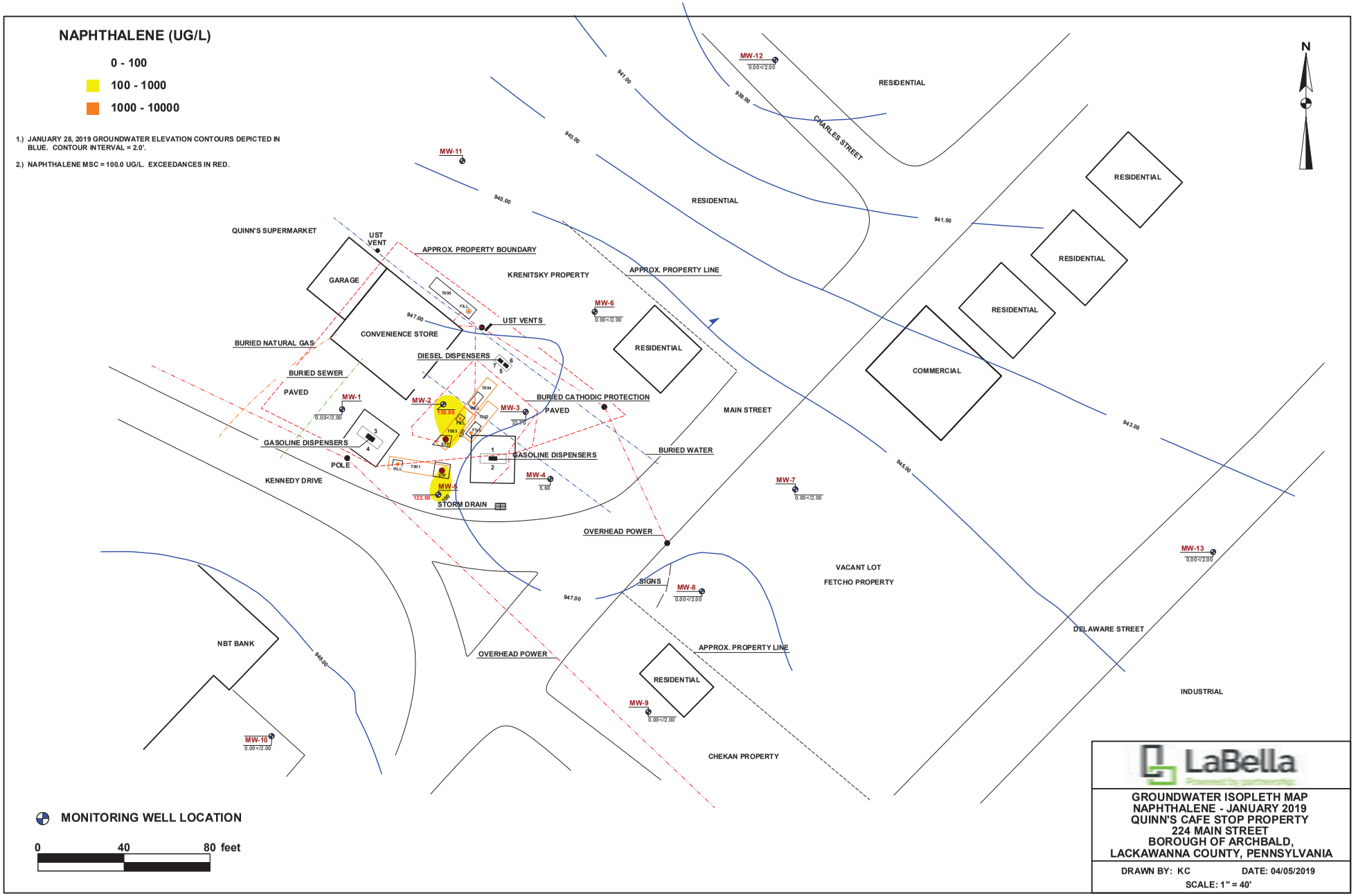
# APPENDIX D

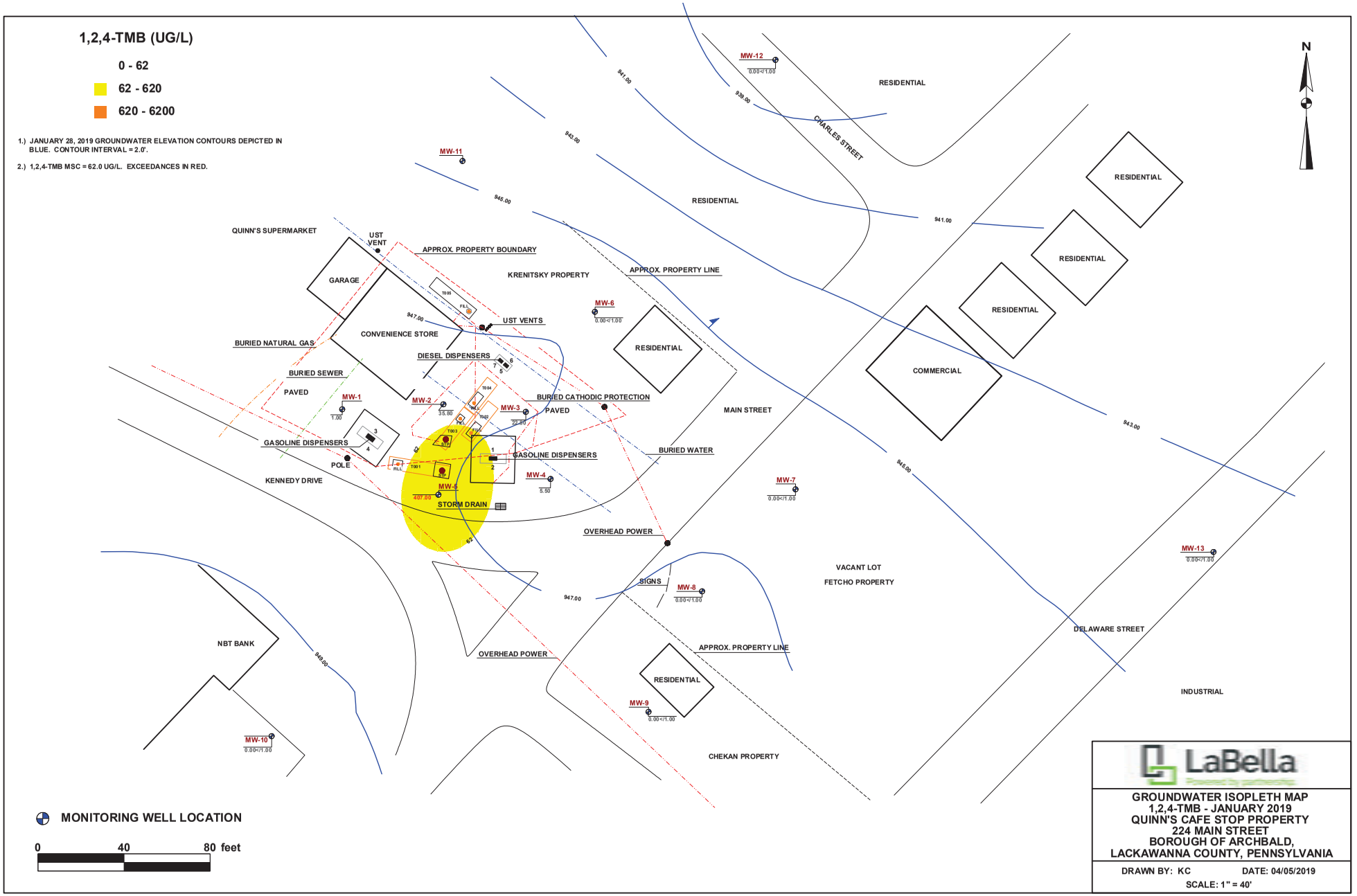
Groundwater Isopleth Maps – January 2019


BENZENE (UG/L)
0 - 5
5 - 50
50 - 500
500 - 5000
1.) JANUARY 28, 2019 GROUNDWATER ELEVATION CONTOURS DEPICTED IN BLUE. CONTOUR INTERVAL = 2.0'.
2.) BENZENE MSC = 5.0 UG/L. EXCEEDANCES IN RED.
N
MW-12
0.00<1.00
RESIDENTIAL
941.00
939.00
CHARLES STREET
943.00
MW-11
945.00
RESIDENTIAL
941.00
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
GARAGE
MW-6
0.00<1.00
947.00
UST VENTS
CONVENIENCE STORE
RESIDENTIAL
BURIED NATURAL GAS
DIESEL DISPENSERS
COMMERCIAL
BURIED SEWER
PAVED
MW-1
0.00<1.00
MW-2
41.00
MW-3
83.90
BURIED CATHODIC PROTECTION
PAVED
MAIN STREET
943.00
GASOLINE DISPENSERS
BURIED WATER
POLE
GASOLINE DISPENSERS
945.00
KENNEDY DRIVE
MW-4
83.90
MW-5
66.90
MW-7
0.00<1.00
STORM DRAIN
OVERHEAD POWER
MW-13
0.00<1.00
VACANT LOT
FETCHO PROPERTY
SIGNS
MW-8
0.00<1.00
947.00
DELAWARE STREET
NBT BANK
948.00
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
0.00<1.00
MW-10
0.00<1.00
CHEKAN PROPERTY
MONITORING WELL LOCATION
0
40
80 feet
LaBella
GROUNDWATER ISOPLETH MAP
BENZENE - JANUARY 2019
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 04/05/2019
SCALE: 1" = 40'


ETHYLBENZENE (UG/L)
0 - 700
700 - 7000
7000 - 70000
1.) JANUARY 28, 2019 GROUNDWATER ELEVATION CONTOURS DEPICTED IN BLUE. CONTOUR INTERVAL = 2.0'.
2.) ETHYLBENZENE MSC = 700.0 UG/L. EXCEEDANCES IN RED.
N
MW-12
0.00</1.00
RESIDENTIAL
941.00
939.00
CHARLES STREET
943.00
MW-11
945.00
RESIDENTIAL
941.00
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
COMMERCIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
GARAGE
MW-6
0.00</1.00
947.00
UST VENTS
CONVENIENCE STORE
RESIDENTIAL
BURIED NATURAL GAS
DIESEL DISPENSERS
BURIED SEWER
PAVED
MW-1
0.00</1.00
MW-2
178.00
MW-3
161.00
PAVED
BURIED CATHODIC PROTECTION
MAIN STREET
943.00
GASOLINE DISPENSERS
POLE
KENNEDY DRIVE
GASOLINE DISPENSERS
BURIED WATER
MW-4
11.70
MW-5
429.00
STORM DRAIN
945.00
MW-7
0.00</1.00
OVERHEAD POWER
MW-13
0.00</1.00
VACANT LOT
FETCHO PROPERTY
SIGNS
MW-8
0.00</1.00
947.00
DELAWARE STREET
NBT BANK
948.00
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
0.00</1.00
MW-10
0.00</1.00
CHEKAN PROPERTY
MONITORING WELL LOCATION
0
40
80 feet
LaBella
GROUNDWATER ISOPLETH MAP
ETHYLBENZENE - JANUARY 2019
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 04/05/2019
SCALE: 1" = 40'

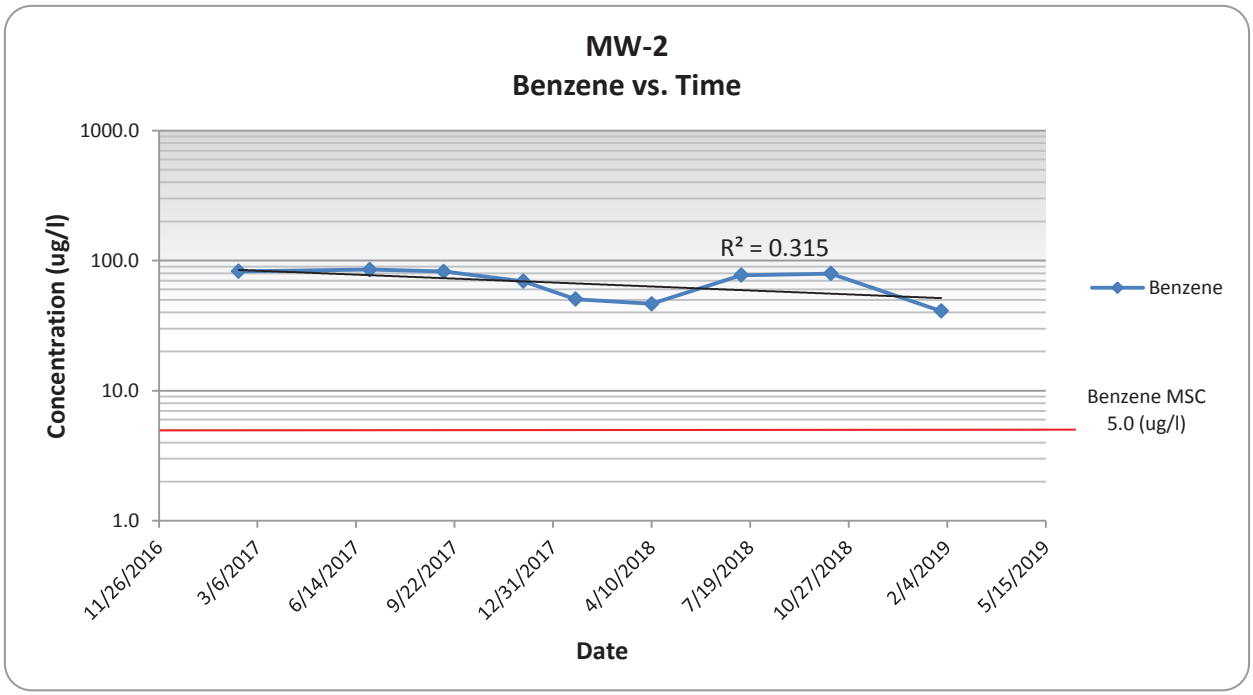

MTBE (UG/L)
0 - 20
20 - 200
200 - 2000
1.) JANUARY 28, 2019 GROUNDWATER ELEVATION CONTOURS DEPICTED IN BLUE. CONTOUR INTERVAL = 2.0'.
2.) MTBE MSC = 20.0 UG/L. EXCEEDANCES IN RED.
N
MW-12
1.80
RESIDENTIAL
941.00
939.00
CHARLES STREET
943.00
MW-11
945.00
RESIDENTIAL
941.00
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
GARAGE
MW-6
1.30
947.00
UST VENTS
CONVENIENCE STORE
RESIDENTIAL
BURIED NATURAL GAS
DIESEL DISPENSERS
BURIED SEWER
COMMERCIAL
PAVED
MW-1
0.00</1.00
MW-2
0.00</5.00
MW-3
6.00
BURIED CATHODIC PROTECTION
PAVED
MAIN STREET
943.00
20
GASOLINE DISPENSERS
BURIED WATER
945.00
GASOLINE DISPENSERS
POLE
MW-4
199.00
MW-7
0.00</1.00
KENNEDY DRIVE
MW-5
0.00</5.00
STORM DRAIN
OVERHEAD POWER
MW-13
0.00</1.00
VACANT LOT
FETCHO PROPERTY
SIGNS
MW-8
0.00</1.00
947.00
DELAWARE STREET
NBT BANK
948.00
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
0.00</1.00
MW-10
0.00</1.00
CHEKAN PROPERTY
MONITORING WELL LOCATION
0
40
80 feet
LaBella
GROUNDWATER ISOPLETH MAP
MTBE - JANUARY 2019
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 04/05/2019
SCALE: 1" = 40'

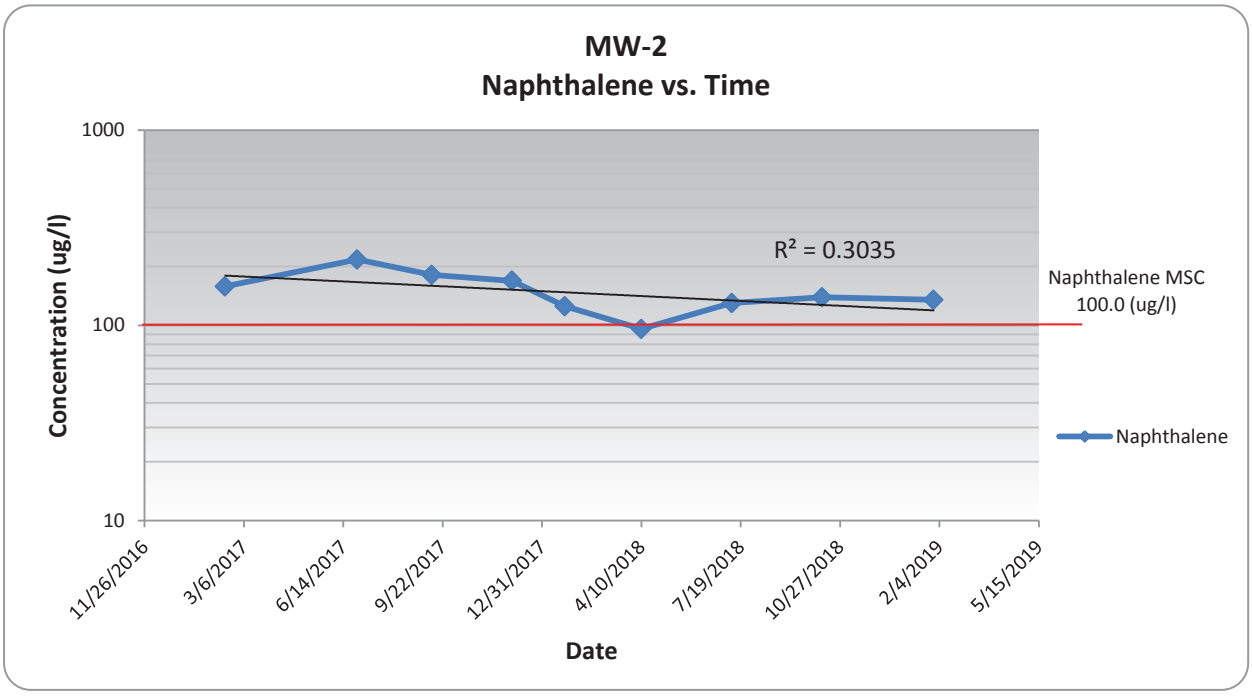

NAPHTHALENE (UG/L)
0 - 100
100 - 1000
1000 - 10000
1.) JANUARY 28, 2019 GROUNDWATER ELEVATION CONTOURS DEPICTED IN BLUE. CONTOUR INTERVAL = 2.0'.
2.) NAPHTHALENE MSC = 100.0 UG/L. EXCEEDANCES IN RED.
N
MW-12
0.00<2.00
RESIDENTIAL
941.00
939.00
CHARLES STREET
943.00
MW-11
945.00
RESIDENTIAL
941.00
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
COMMERCIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
GARAGE
MW-6
0.00<2.00
947.00
UST VENTS
CONVENIENCE STORE
RESIDENTIAL
BURIED NATURAL GAS
DIESEL DISPENSERS
BURIED SEWER
PAVED
MW-1
0.00<2.00
MW-2
135.00
MW-3
33.70
BURIED CATHODIC PROTECTION
PAVED
MAIN STREET
943.00
GASOLINE DISPENSERS
BURIED WATER
GASOLINE DISPENSERS
POLE
KENNEDY DRIVE
MW-4
5.60
945.00
MW-5
122.00
STORM DRAIN
MW-7
0.00<2.00
OVERHEAD POWER
MW-13
0.00<2.00
VACANT LOT
FETCHO PROPERTY
SIGNS
MW-8
0.00<2.00
947.00
DELAWARE STREET
NBT BANK
948.00
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
0.00<2.00
MW-10
0.00<2.00
CHEKAN PROPERTY
MONITORING WELL LOCATION
0
40
80 feet
LaBella
GROUNDWATER ISOPLETH MAP
NAPHTHALENE - JANUARY 2019
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 04/05/2019
SCALE: 1" = 40'

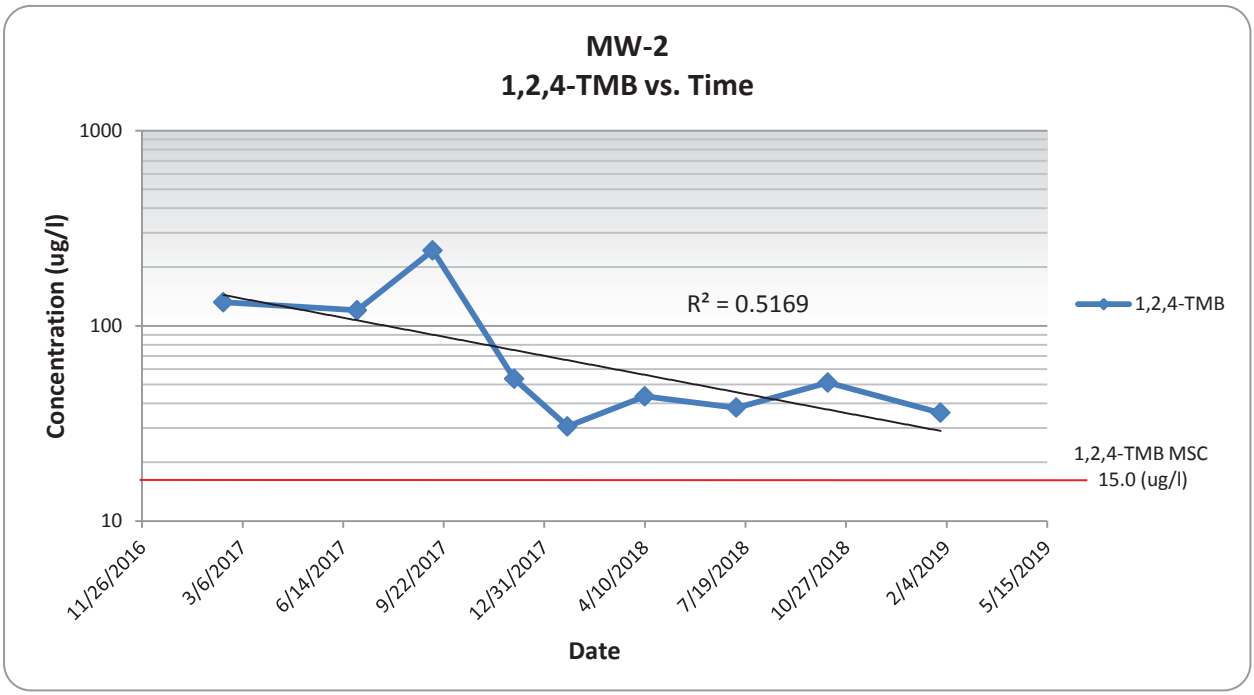

1,2,4-TMB (UG/L)
0 - 62
62 - 620
620 - 6200
1.) JANUARY 28, 2019 GROUNDWATER ELEVATION CONTOURS DEPICTED IN BLUE. CONTOUR INTERVAL = 2.0'.
2.) 1,2,4-TMB MSC = 62.0 UG/L. EXCEEDANCES IN RED.
N
MW-12
0.00</1.00
RESIDENTIAL
941.00
939.00
CHARLES STREET
943.00
MW-11
945.00
RESIDENTIAL
941.00
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
COMMERCIAL
QUINN'S SUPERMARKET
UST VENT
APPROX. PROPERTY BOUNDARY
KRENITSKY PROPERTY
APPROX. PROPERTY LINE
GARAGE
MW-6
0.00</1.00
947.00
UST VENTS
CONVENIENCE STORE
RESIDENTIAL
BURIED NATURAL GAS
DIESEL DISPENSERS
BURIED SEWER
PAVED
MW-1
1.00
MW-2
35.80
MW-3
22.80
BURIED CATHODIC PROTECTION
PAVED
MAIN STREET
943.00
GASOLINE DISPENSERS
BURIED WATER
GASOLINE DISPENSERS
POLE
945.00
KENNEDY DRIVE
MW-4
5.50
MW-5
407.00
STORM DRAIN
MW-7
0.00</1.00
OVERHEAD POWER
MW-13
0.00</1.00
VACANT LOT
FETCHO PROPERTY
SIGNS
MW-8
0.00</1.00
947.00
DELAWARE STREET
NBT BANK
948.00
APPROX. PROPERTY LINE
OVERHEAD POWER
RESIDENTIAL
INDUSTRIAL
MW-9
0.00</1.00
MW-10
0.00</1.00
CHEKAN PROPERTY
MONITORING WELL LOCATION
0
40
80 feet
LaBella
GROUNDWATER ISOPLETH MAP
1,2,4-TMB - JANUARY 2019
QUINN'S CAFE STOP PROPERTY
224 MAIN STREET
BOROUGH OF ARCHBALD,
LACKAWANNA COUNTY, PENNSYLVANIA
DRAWN BY: KC
DATE: 04/05/2019
SCALE: 1" = 40'

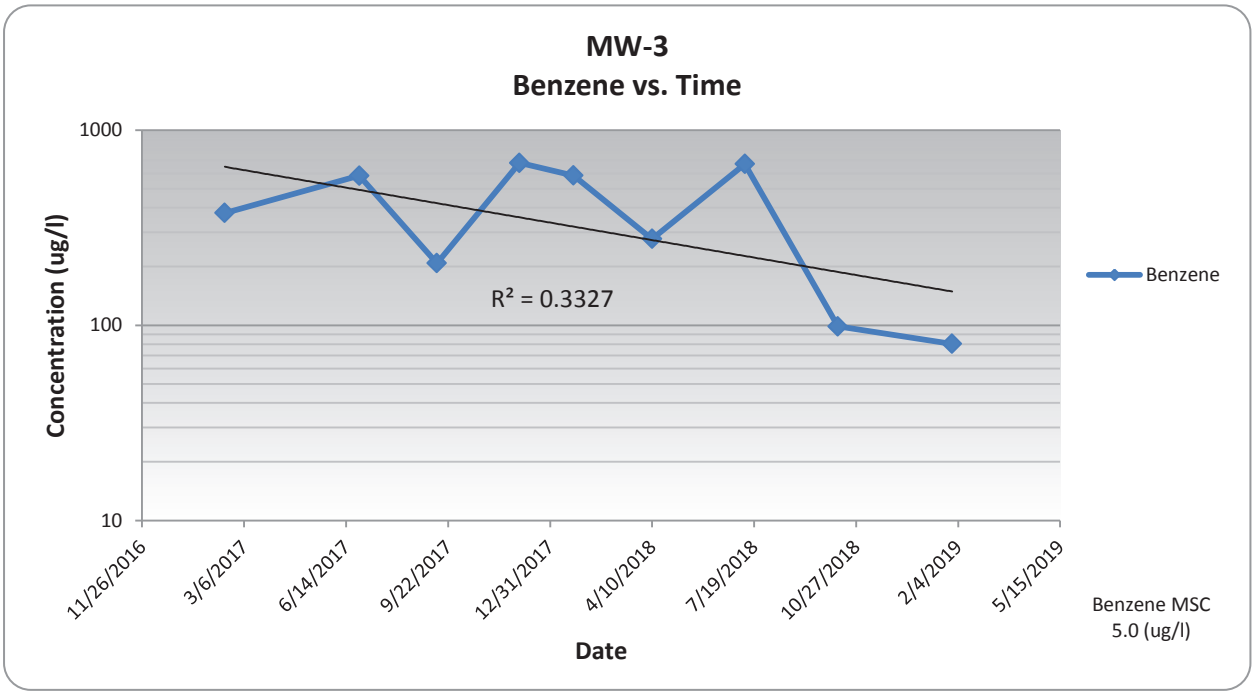
# APPENDIX E

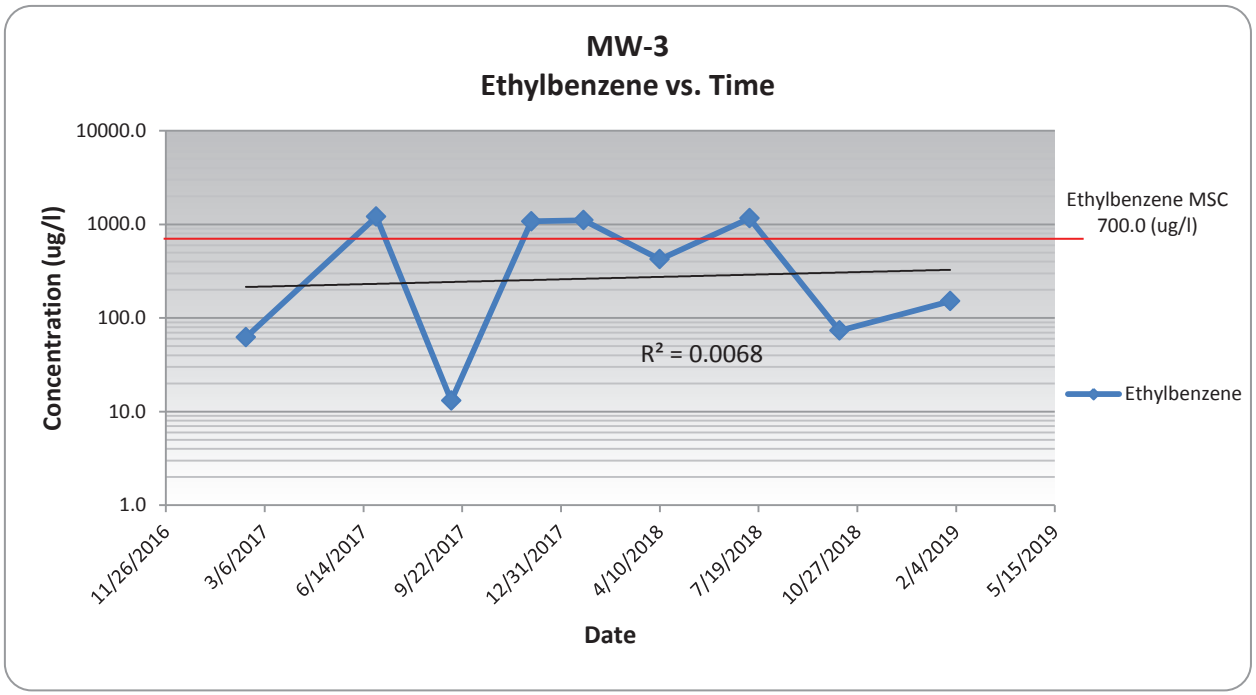
## Groundwater Temporal Trend Analysis

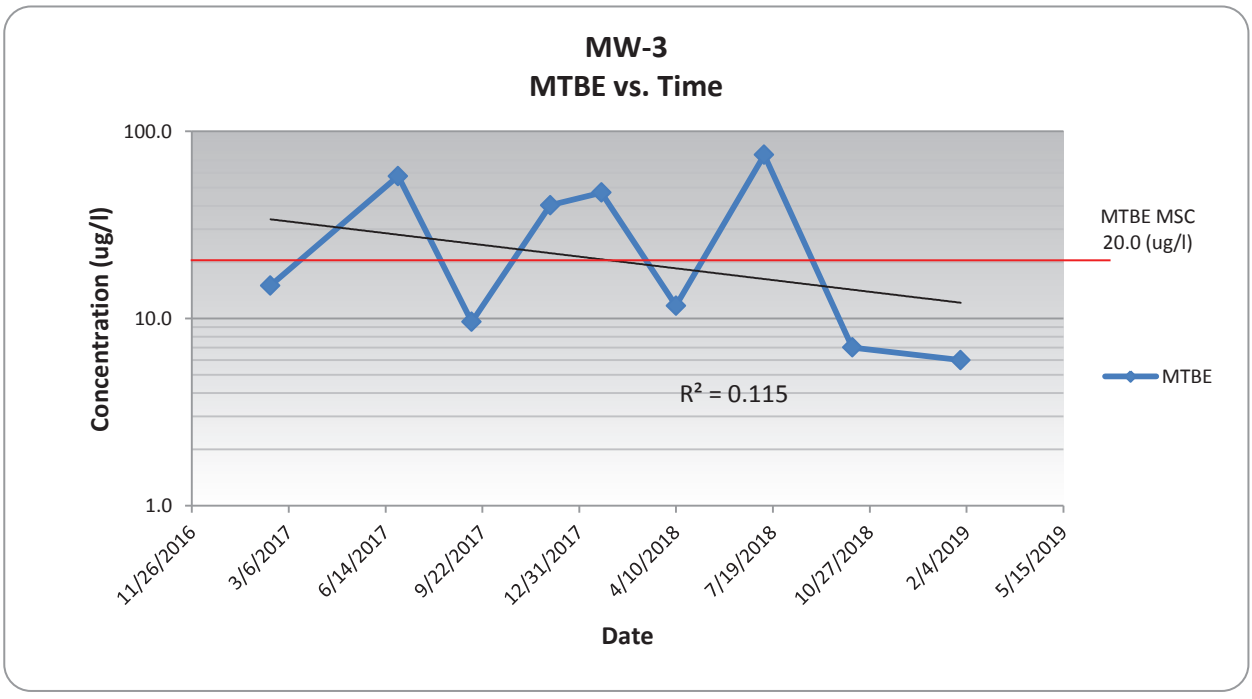

MW-2
Benzene vs. Time
1000.0
100.0
10.0
1.0
Concentration (ug/l)
R² = 0.315
Benzene
Benzene MSC
5.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

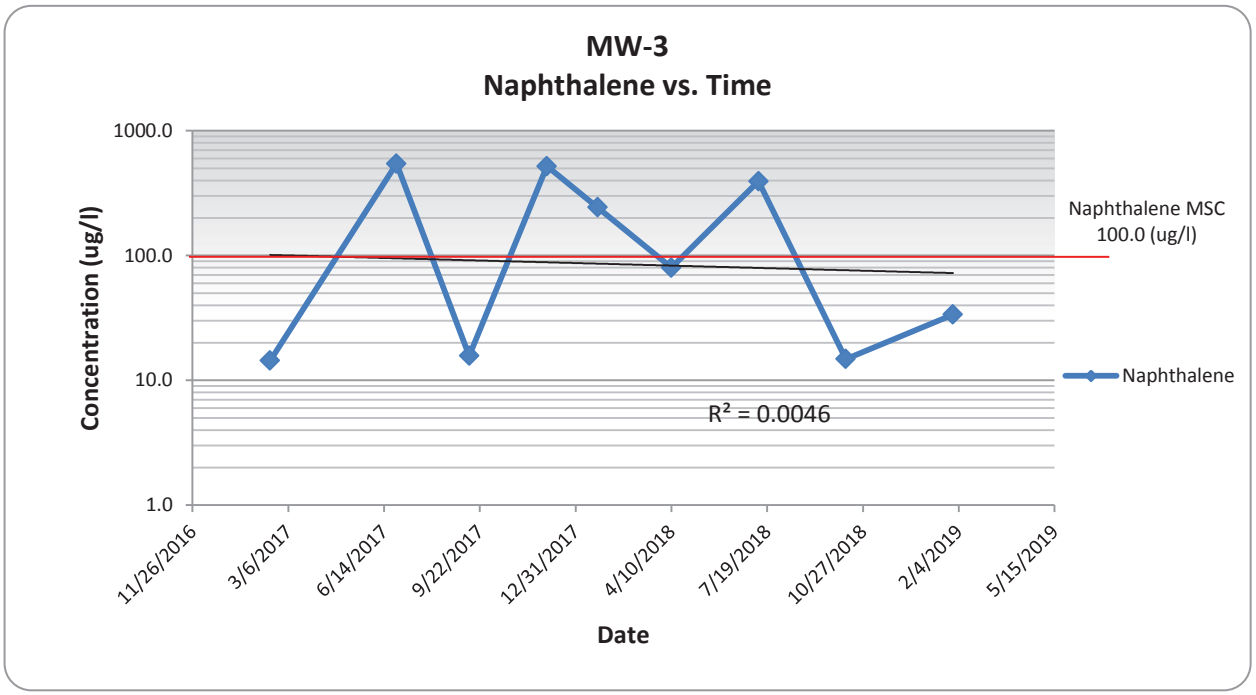

MW-2
Naphthalene vs. Time
1000
100
10
Concentration (ug/l)
R² = 0.3035
Naphthalene MSC
100.0 (ug/l)
Naphthalene
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

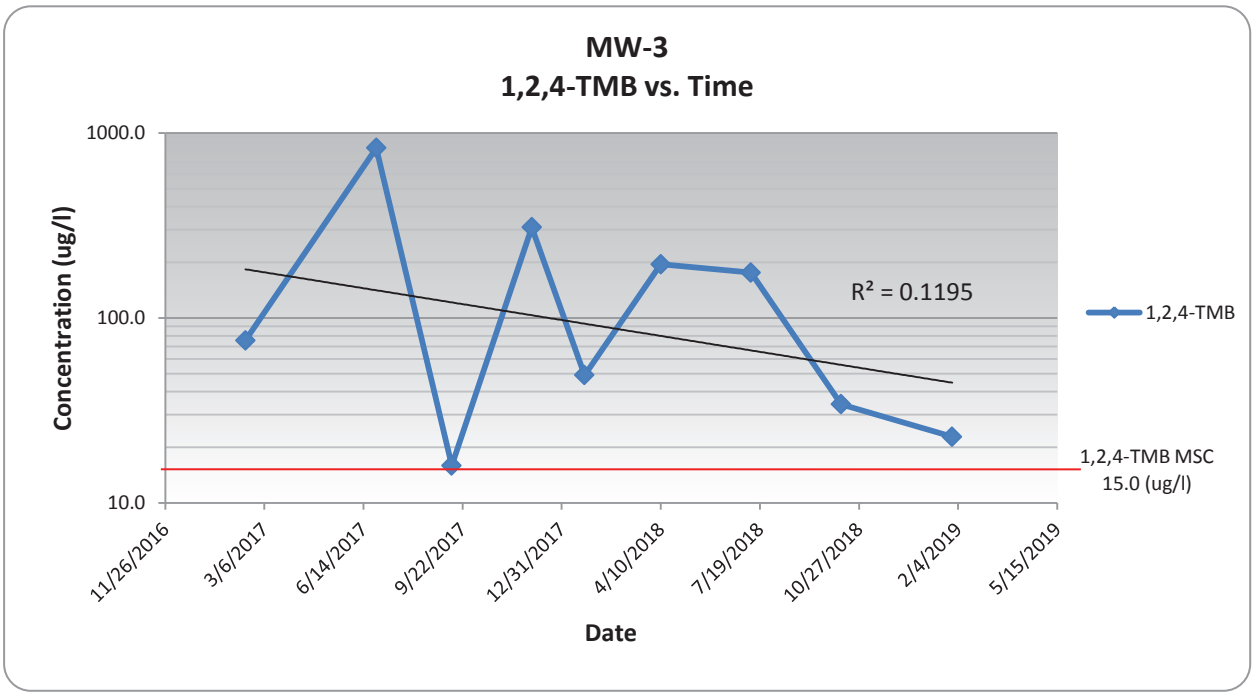

MW-2
1,2,4-TMB vs. Time
1000
100
10
Concentration (ug/l)
R² = 0.5169
1,2,4-TMB
1,2,4-TMB MSC
15.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

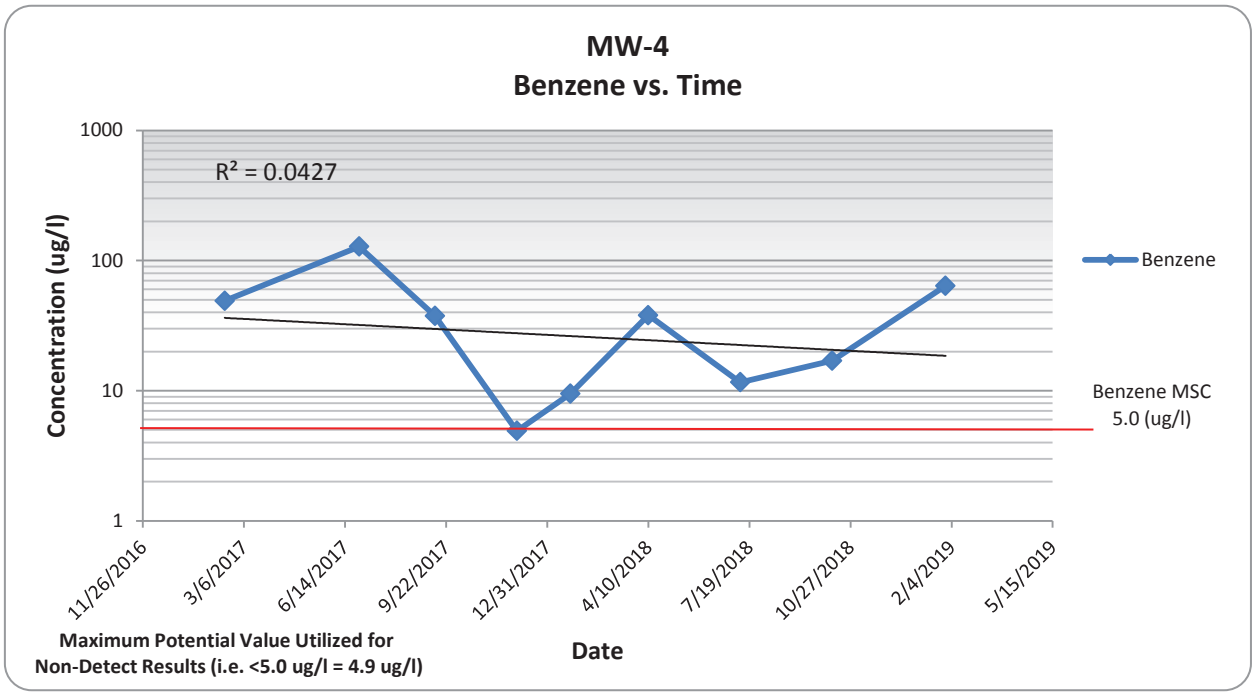

MW-3
Benzene vs. Time
1000
100
10
Concentration (ug/l)
R² = 0.3327
Benzene
Benzene MSC
5.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

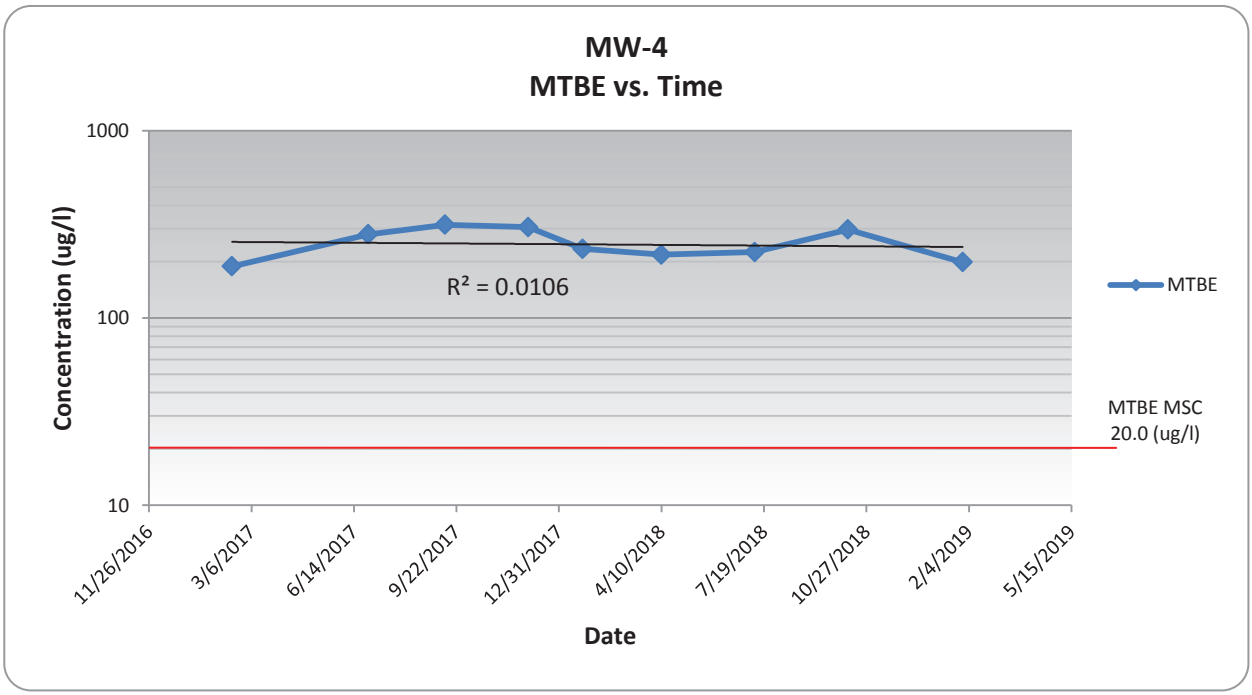

MW-3
Ethylbenzene vs. Time
10000.0
1000.0
100.0
10.0
1.0
Concentration (ug/l)
R² = 0.0068
Ethylbenzene MSC
700.0 (ug/l)
Ethylbenzene
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

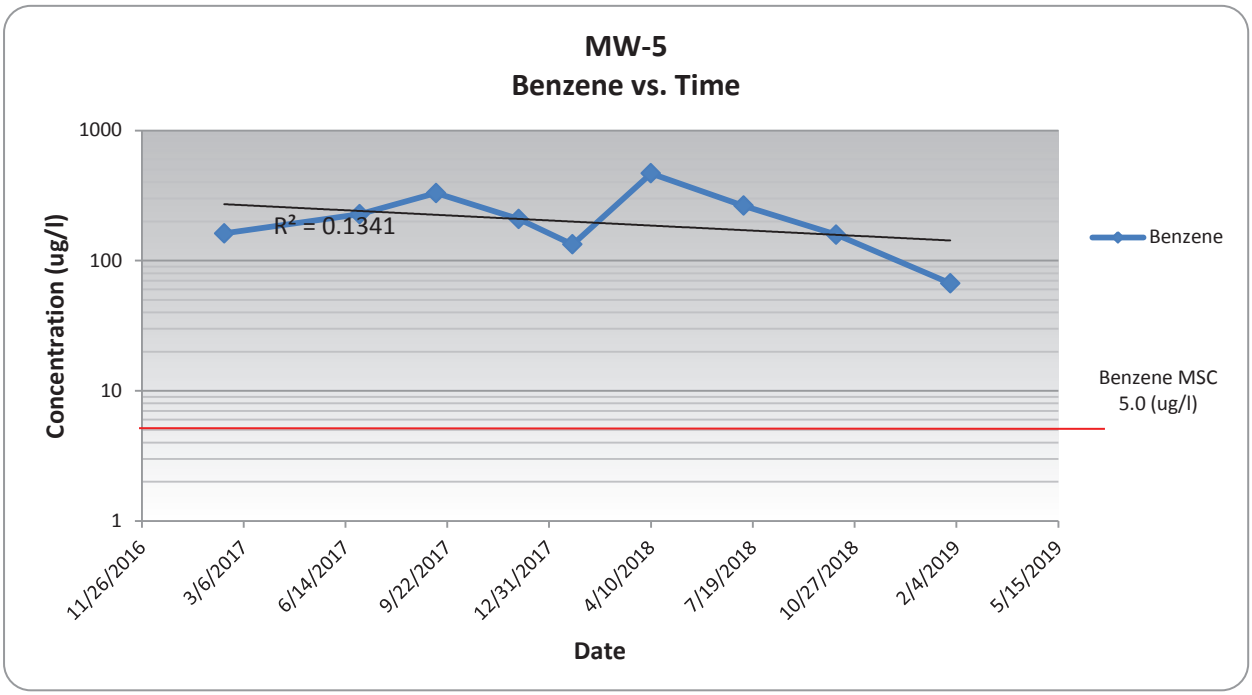

MW-3
MTBE vs. Time
100.0
10.0
1.0
Concentration (ug/l)
R² = 0.115
MTBE MSC
20.0 (ug/l)
MTBE
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

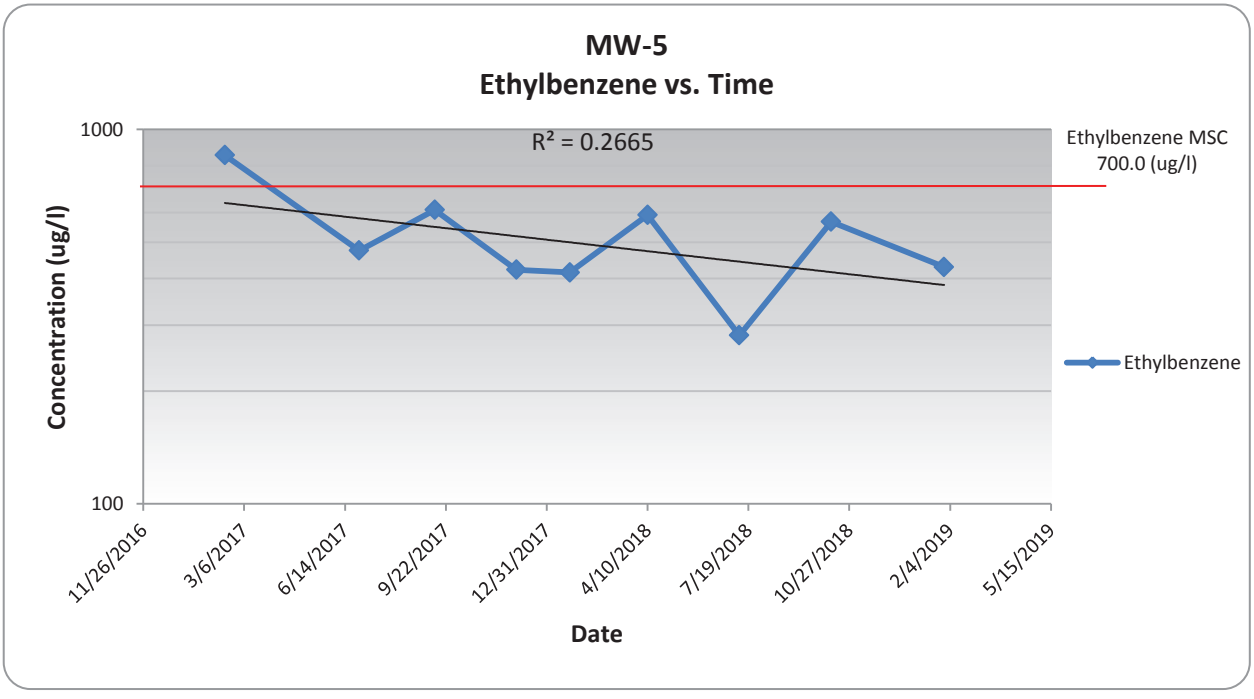

MW-3
Naphthalene vs. Time
1000.0
100.0
10.0
1.0
Concentration (ug/l)
R² = 0.0046
Naphthalene MSC
100.0 (ug/l)
Naphthalene
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

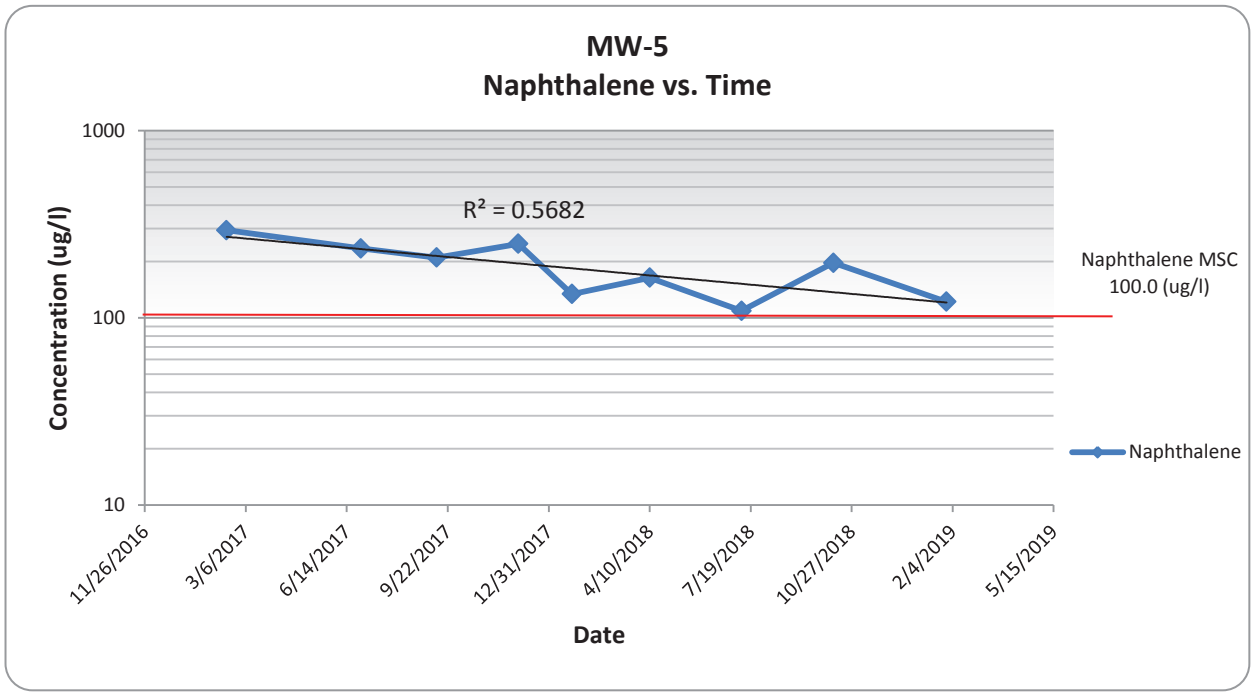

MW-3
1,2,4-TMB vs. Time
1000.0
100.0
10.0
Concentration (ug/l)
R² = 0.1195
1,2,4-TMB
1,2,4-TMB MSC
15.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

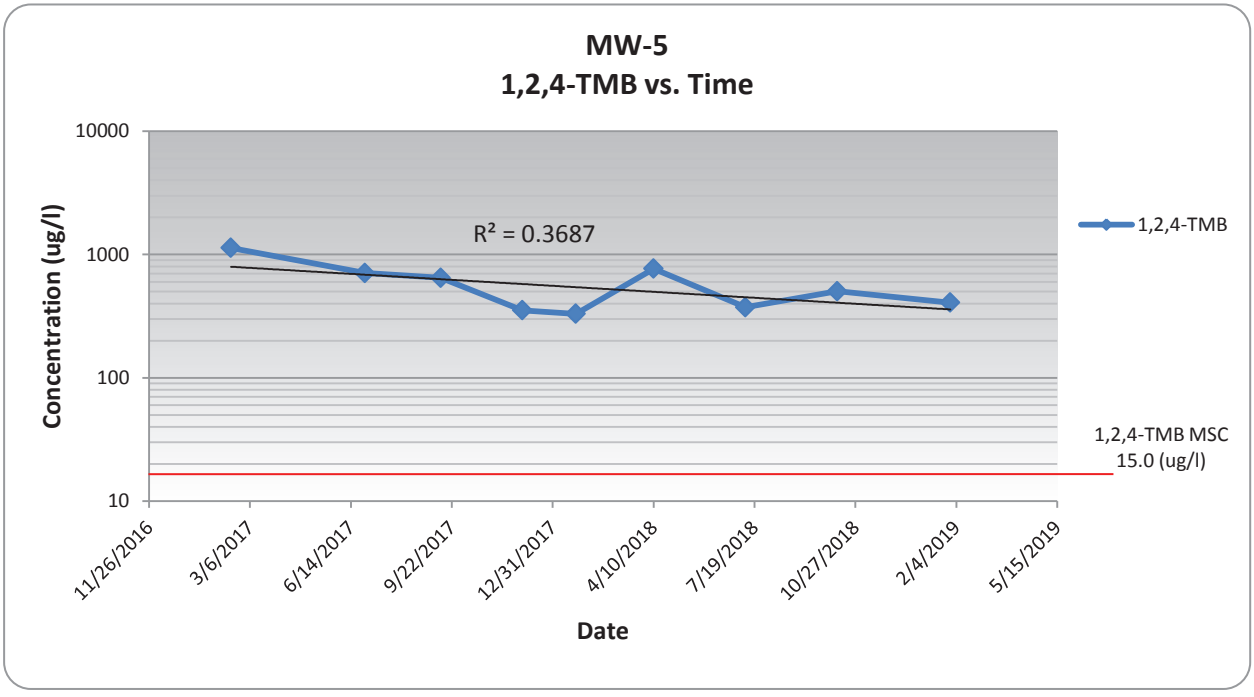

MW-4
Benzene vs. Time
1000
100
10
1
R² = 0.0427
Concentration (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date
Benzene
Benzene MSC
5.0 (ug/l)
Maximum Potential Value Utilized for
Non-Detect Results (i.e. <5.0 ug/l = 4.9 ug/l)

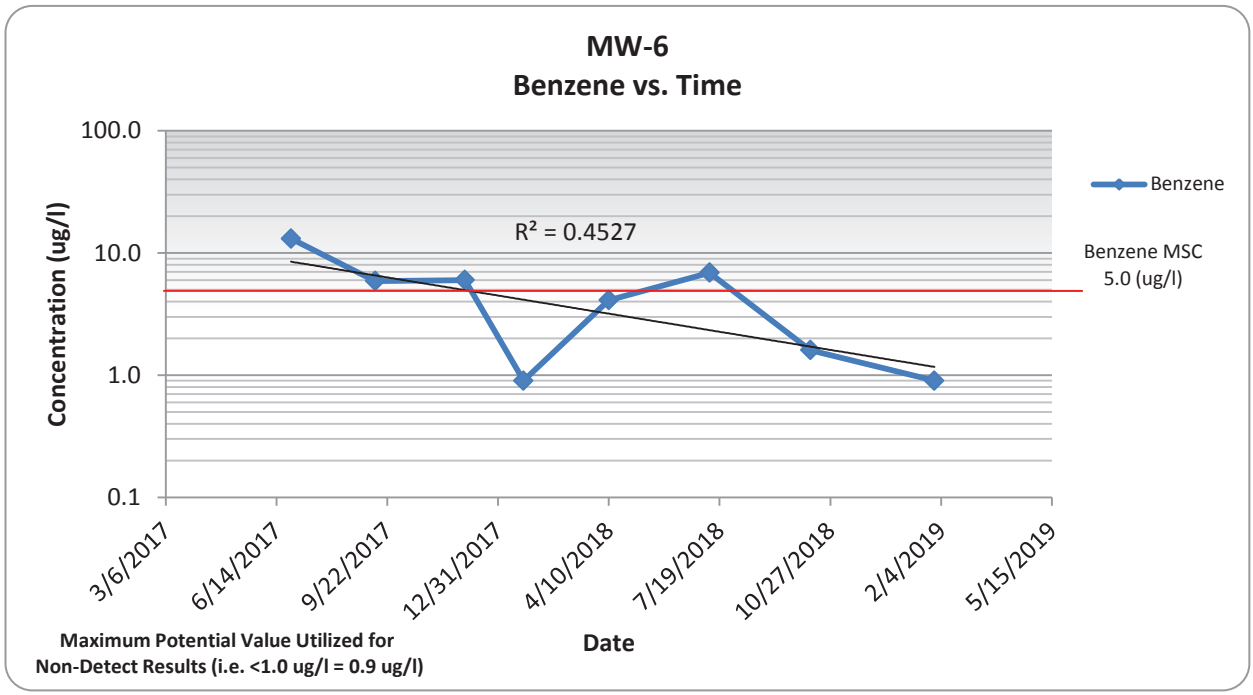

MW-4
MTBE vs. Time
1000
100
10
R² = 0.0106
Concentration (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date
MTBE
MTBE MSC
20.0 (ug/l)

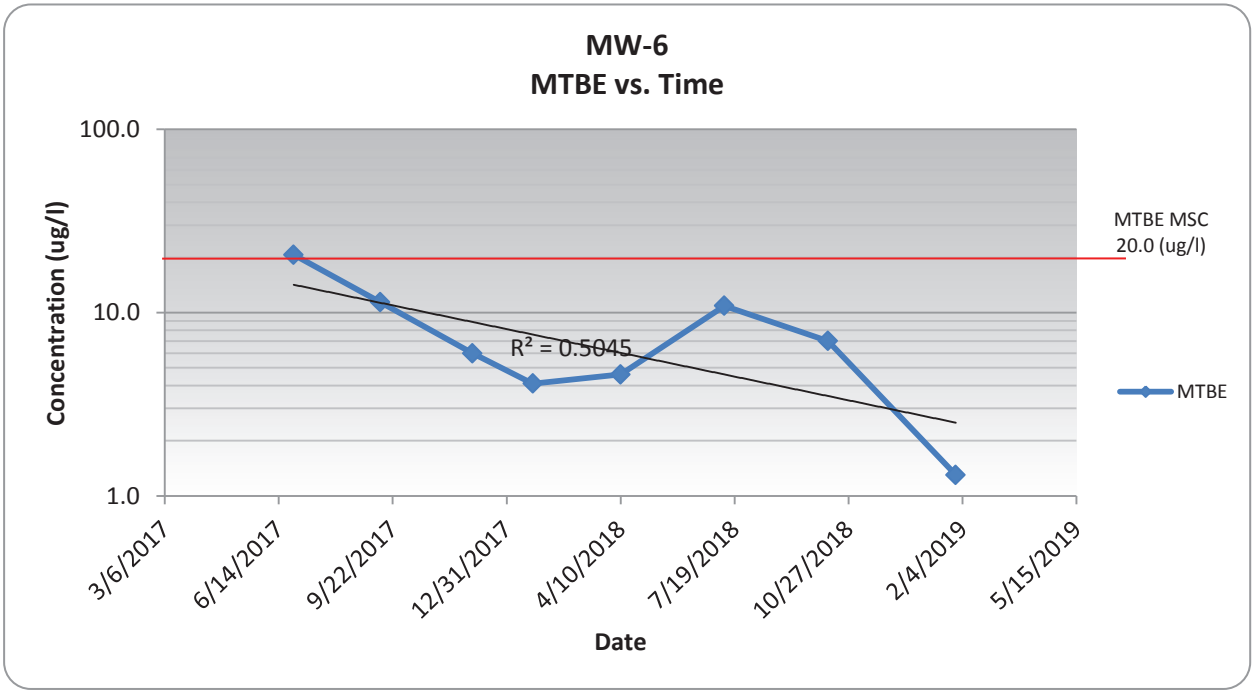

MW-5
Benzene vs. Time
1000
100
10
1
Concentration (ug/l)
R² = 0.1341
Benzene
Benzene MSC
5.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date


MW-5
Ethylbenzene vs. Time
1000
100
Concentration (ug/l)
R² = 0.2665
Ethylbenzene MSC
700.0 (ug/l)
Ethylbenzene
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date


MW-5
Naphthalene vs. Time
1000
100
10
Concentration (ug/l)
R² = 0.5682
Naphthalene MSC
100.0 (ug/l)
Naphthalene
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date


MW-5
1,2,4-TMB vs. Time
10000
1000
100
10
Concentration (ug/l)
R² = 0.3687
1,2,4-TMB
1,2,4-TMB MSC
15.0 (ug/l)
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date


MW-6
Benzene vs. Time
100.0
10.0
1.0
0.1
Concentration (ug/l)
R² = 0.4527
Benzene
Benzene MSC
5.0 (ug/l)
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date
Maximum Potential Value Utilized for
Non-Detect Results (i.e. <1.0 ug/l = 0.9 ug/l)


MW-6
MTBE vs. Time
100.0
10.0
1.0
Concentration (ug/l)
R² = 0.5045
MTBE MSC
20.0 (ug/l)
MTBE
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
Date

# APPENDIX F

## Historical Soil Analytical Summary Tables

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | T001 - Fill | T001 - STP | T002 - Fill | T003 - Fill | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **2.0'** | **2.0'** | **2.0'** | **1.5'** | | |
| **Condition** | **Vadose** | **Vadose** | **Vadose** | **Vadose** | | |
| **Sample Date** | **10/17/2016** | **10/17/2016** | **10/17/2016** | **10/17/2016** | | |
| **% Moisture** | **14.5%** | **12.9%** | **12.4%** | **12.2%** | | |
| **Benzene** | 1.69 | **0.251** | 0.699 | **0.148** | 0.5 | 0.5 |
| **Ethylbenzene** | **5.13** | **0.704** | **6.92** | **2.77** | 70.0 | 70.0 |
| **Cumene** | **0.728** | **0.148** | **2.38** | **0.673** | 2,500.0 | 350.0 |
| **MTBE** | <0.0406 | <0.0462 | <0.0498 | <0.0455 | 2.0 | 2.0 |
| **Naphthalene** | **2.05** | **0.253** | **23.3** | **8.8** | 25.0 | 10.0 |
| **Toluene** | **49.5** | **5.0** | **8.57** | **2.73** | 100.0 | 100.0 |
| **Total Xylenes** | **40.7** | **6.2** | **80.1** | **51.3** | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | **6.39** | **0.977** | 109 | 62.8 | 35.0 | 6.2 |
| **1,3,5-TMB** | **3.44** | **0.445** | **32.5** | **26.9** | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | T003 - STP | T004 - Fill | TB-1 | TB-2A | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **2.5'** | **1.5'** | **1.5' - 2.5'** | **1.5' - 2.5'** | | |
| **Condition** | **Vadose** | **Vadose** | **Vadose** | **Vadose** | | |
| **Sample Date** | **10/17/2016** | **10/17/2016** | **1/31/2017** | **1/30/2017** | | |
| **% Moisture** | **8.2%** | **4.9%** | **5.2%** | **11.8%** | | |
| **Benzene** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 70.0 | 70.0 |
| **Cumene** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 2,500.0 | 350.0 |
| **MTBE** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 2.0 | 2.0 |
| **Naphthalene** | <0.0831 | <0.0738 | <0.0928 | <0.123 | 25.0 | 10.0 |
| **Toluene** | **0.0981** | <0.0369 | <0.0464 | <0.0615 | 100.0 | 100.0 |
| **Total Xylenes** | **0.144** | <0.111 | <0.139 | <0.185 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0416 | <0.0369 | <0.0464 | <0.0615 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-2B | TB-3A | TB-3B | TB-4A | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **4.0' - 5.0'** | **1. 5' - 2.5'** | **4.0' - 5.0'** | **1.5' - 2.5'** | | |
| **Condition** | **Smear** | **Vadose** | **Smear** | **Vadose** | | |
| **Sample Date** | **1/30/2017** | **1/30/2017** | **1/30/2017** | **1/31/2017** | | |
| **% Moisture** | **9.0%** | **10.7%** | **34.4%** | **15.1%** | | |
| **Benzene** | <0.0367 | <0.0367 | **0.0639** | <0.0373 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0367 | <0.0367 | <0.0560 | <0.0373 | 70.0 | 70.0 |
| **Cumene** | <0.0367 | <0.0367 | <0.0560 | <0.0373 | 2,500.0 | 350.0 |
| **MTBE** | <0.0367 | <0.0367 | <0.0560 | <0.0373 | 2.0 | 2.0 |
| **Naphthalene** | <0.0734 | <0.0734 | <0.112 | <0.0745 | 25.0 | 10.0 |
| **Toluene** | <0.0367 | <0.0367 | **0.273** | <0.0373 | 100.0 | 100.0 |
| **Total Xylenes** | <0.110 | <0.110 | **0.220** | <0.112 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0367 | <0.0367 | <0.0560 | <0.0373 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0367 | <0.0367 | <0.0560 | <0.0373 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-4B | TB-5A | TB-5B | TB-6A | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **5.0' - 6.0'** | **1.5' - 2.5'** | **4.0' - 5.0'** | **1.5' - 2.5'** | | |
| **Condition** | **Smear** | **Vadose** | **Smear** | **Vadose** | | |
| **Sample Date** | **1/31/2017** | **1/30/2017** | **1/30/2017** | **1/31/2017** | | |
| **% Moisture** | **5.0%** | **9.1%** | **25.4%** | **17.0%** | | |
| **Benzene** | <0.0385 | **0.229** | <0.470 | <0.0404 | 0.5 | 0.5 |
| **Ethylbenzene** | **5.22** | <0.0381 | **19.0** | <0.0404 | 70.0 | 70.0 |
| **Cumene** | **2.18** | **0.0787** | **5.25** | <0.0404 | 2,500.0 | 350.0 |
| **MTBE** | <0.0385 | <0.0381 | <0.470 | <0.0404 | 2.0 | 2.0 |
| **Naphthalene** | 14.4 | <0.0762 | 30.3 | <0.0808 | 25.0 | 10.0 |
| **Toluene** | <0.0385 | <0.0381 | **0.498** | <0.0404 | 100.0 | 100.0 |
| **Total Xylenes** | **12.4** | **0.305** | **101.0** | <0.121 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | 83.9 | **0.0647** | 277.0 | <0.0404 | 35.0 | 6.2 |
| **1,3,5-TMB** | **0.187** | <0.0381 | **43.8** | <0.0404 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-6B | TB-7A | TB-7B | MW-1 | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **4.0' - 5.0'** | **1.5' - 2.5'** | **3.5' - 4.5'** | **1.5' - 2.5'** | | |
| **Condition** | **Smear** | **Vadose** | **Smear** | **Vadose** | | |
| **Sample Date** | **1/31/2017** | **1/31/2017** | **1/31/2017** | **1/31/2017** | | |
| **% Moisture** | **16.4%** | **11.1%** | **22.1%** | **8.2%** | | |
| **Benzene** | **0.233** | <0.0361 | **0.338** | <0.0358 | 0.5 | 0.5 |
| **Ethylbenzene** | **0.185** | <0.0361 | **0.679** | <0.0358 | 70.0 | 70.0 |
| **Cumene** | **0.182** | <0.0361 | **0.567** | <0.0358 | 2,500.0 | 350.0 |
| **MTBE** | <0.0400 | <0.0361 | <0.0472 | <0.0358 | 2.0 | 2.0 |
| **Naphthalene** | <0.0800 | <0.0722 | **0.734** | <0.0717 | 25.0 | 10.0 |
| **Toluene** | **0.331** | <0.0361 | **0.102** | <0.0358 | 100.0 | 100.0 |
| **Total Xylenes** | **1.150** | <0.108 | **0.853** | <0.107 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | **0.294** | <0.0361 | **0.180** | <0.0358 | 35.0 | 6.2 |
| **1,3,5-TMB** | **0.178** | <0.0361 | <0.0472 | <0.0358 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | MW-2A | MW-2B | MW-3A | MW-3B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **1.5' - 2.5'** | **4.0' - 5.0'** | **1.5' - 2.5'** | **4.0' - 5.0'** | | |
| **Condition** | **Vadose** | **Smear** | **Vadose** | **Smear** | | |
| **Sample Date** | **1/30/2017** | **1/30/2017** | **1/30/2017** | **1/30/2017** | | |
| **% Moisture** | **6.7%** | **11.9%** | **9.4%** | **27.3%** | | |
| **Benzene** | <0.0597 | <0.369 | <0.0397 | 0.551 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0597 | **11.1** | <0.0397 | **4.01** | 70.0 | 70.0 |
| **Cumene** | <0.0597 | **2.12** | <0.0397 | **0.819** | 2,500.0 | 350.0 |
| **MTBE** | <0.0597 | <0.369 | <0.0397 | <0.0617 | 2.0 | 2.0 |
| **Naphthalene** | <0.119 | 20.8 | <0.0794 | **5.27** | 25.0 | 10.0 |
| **Toluene** | <0.0597 | **0.432** | <0.0397 | **0.411** | 100.0 | 100.0 |
| **Total Xylenes** | <0.179 | **41.8** | **0.146** | **8.88** | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | **0.0698** | 69.1 | **0.057** | 10.9 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0597 | **13.5** | <0.0397 | **1.57** | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | MW-4A | MW-4B | MW-5A | MW-5B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **1.5' - 2.5'** | **4.0' - 5.0'** | **1.5' - 2.5'** | **3.5' - 4.5'** | | |
| **Condition** | **Vadose** | **Smear** | **Vadose** | **Smear** | | |
| **Sample Date** | **1/31/2017** | **1/31/2017** | **1/31/2017** | **1/31/2017** | | |
| **% Moisture** | **10.0%** | **14.9%** | **13.1%** | **19.5%** | | |
| **Benzene** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 70.0 | 70.0 |
| **Cumene** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 2,500.0 | 350.0 |
| **MTBE** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 2.0 | 2.0 |
| **Naphthalene** | <0.103 | <0.0900 | <0.0776 | <0.0900 | 25.0 | 10.0 |
| **Toluene** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 100.0 | 100.0 |
| **Total Xylenes** | <0.154 | <0.135 | <0.116 | <0.135 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0513 | <0.0450 | <0.0388 | <0.0450 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | MW-6A | MW-6B | MW-7A | MW-7B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **1.5 - 2.5'** | **4.0' - 5.0'** | **1.5' - 2.5'** | **5.5' - 6.5'** | | |
| **Condition** | **Vadose** | **Smear** | **Vadose** | **Smear** | | |
| **Sample Date** | **6/5/2017** | **6/5/2017** | **6/5/2017** | **6/7/2017** | | |
| **% Moisture** | **9.3%** | **24.2%** | **11.5%** | **19.6%** | | |
| **Benzene** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 70.0 | 70.0 |
| **Cumene** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 2,500.0 | 350.0 |
| **MTBE** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 2.0 | 2.0 |
| **Naphthalene** | <0.0768 | <0.0526 | <0.0663 | <0.112 | 25.0 | 10.0 |
| **Toluene** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 100.0 | 100.0 |
| **Total Xylenes** | <0.115 | <0.0790 | <0.0995 | <0.168 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0384 | <0.0263 | <0.0332 | <0.0561 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | MW-8A | MW-8B | MW-9A | MW-9B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **1.5' - 2.5'** | **5.5' - 6.5'** | **1.5' - 2.5'** | **3.0' - 4.0'** | | |
| **Condition** | **Vadose** | **Smear** | **Vadose** | **Smear** | | |
| **Sample Date** | **6/5/2017** | **6/7/2017** | **6/5/2017** | **6/5/2017** | | |
| **% Moisture** | **12.5%** | **11.0%** | **14.0%** | **10.6%** | | |
| **Benzene** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 70.0 | 70.0 |
| **Cumene** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 2,500.0 | 350.0 |
| **MTBE** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 2.0 | 2.0 |
| **Naphthalene** | <0.0864 | <0.0855 | <0.0746 | <0.0732 | 25.0 | 10.0 |
| **Toluene** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 100.0 | 100.0 |
| **Total Xylenes** | <0.130 | <0.128 | <0.112 | <0.110 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0432 | <0.0428 | <0.0373 | <0.0366 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | MW-10A | MW-10B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|
| **Depth** | **1.5' - 2.5'** | **7.5' - 8.5'** | | |
| **Condition** | **Vadose** | **Smear** | | |
| **Sample Date** | **6/5/2017** | **6/5/2017** | | |
| **% Moisture** | **10.2%** | **8.7%** | | |
| **Benzene** | <0.0424 | <0.0431 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0424 | <0.0431 | 70.0 | 70.0 |
| **Cumene** | <0.0424 | <0.0431 | 2,500.0 | 350.0 |
| **MTBE** | <0.0424 | <0.0431 | 2.0 | 2.0 |
| **Naphthalene** | <0.0848 | <0.0863 | 25.0 | 10.0 |
| **Toluene** | <0.0424 | <0.0431 | 100.0 | 100.0 |
| **Total Xylenes** | <0.127 | <0.129 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0424 | <0.0431 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0424 | <0.0431 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | Storm 1 | Storm 2 | Sidewall 1 | Under Storm | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **7.0'** | **5.0'** | **6.5'** | **6.0'** | | |
| **Condition** | **PSZ** | **Smear** | **Smear** | **Smear** | | |
| **Sample Date** | **8/25/2017** | **8/28/2017** | **8/28/2017** | **8/28/2017** | | |
| **% Moisture** | **33.7%** | **17.8%** | **10.7%** | **23.3%** | | |
| **Benzene** | **0.317** | <0.0462 | <0.0454 | **0.17** | 0.5 | 0.5 |
| **Ethylbenzene** | **0.388** | <0.0462 | <0.0454 | **0.917** | 70.0 | 70.0 |
| **Cumene** | <0.0742 | <0.0462 | <0.0454 | **0.559** | 2,500.0 | 350.0 |
| **MTBE** | <0.0742 | <0.0462 | <0.0454 | <0.0586 | 2.0 | 2.0 |
| **Naphthalene** | **0.548** | <0.0925 | <0.0909 | **1.880** | 25.0 | 10.0 |
| **Toluene** | **1.55** | <0.0462 | <0.0454 | **0.159** | 100.0 | 100.0 |
| **Total Xylenes** | **3.58** | <0.139 | <0.136 | **0.934** | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | **1.5** | <0.0462 | **0.0492** | 8.48 | 35.0 | 6.2 |
| **1,3,5-TMB** | **0.25** | <0.0462 | <0.0454 | **0.485** | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-8A | TB-8B | TB-9A | TB-9B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **3.0' - 3.3'** | **5.5' - 6.0'** | **2.0' - 2.5'** | **3.0' - 3.3'** | | |
| **Condition** | **Vadose** | **Smear** | **Vadose** | **Vadose** | | |
| **Sample Date** | **11/9/2017** | **11/9/2017** | **11/9/2017** | **11/9/2017** | | |
| **% Moisture** | **13.6%** | **11.0%** | **16.0%** | **14.8%** | | |
| **Benzene** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 70.0 | 70.0 |
| **Cumene** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 2,500.0 | 350.0 |
| **MTBE** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 2.0 | 2.0 |
| **Naphthalene** | <0.0636 | <0.066 | <0.0667 | **0.518** | 25.0 | 10.0 |
| **Toluene** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 100.0 | 100.0 |
| **Total Xylenes** | <0.0954 | <0.099 | <0.100 | <0.0911 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0318 | <0.033 | <0.0334 | <0.0304 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-10A | TB-10B | TB-10C | TB-11A | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **2.0' - 2.5'** | **4.0' - 4.5'** | **6.0' - 6.5'** | **2.0' - 2.5'** | | |
| **Condition** | **Vadose** | **Smear** | **Smear** | **Vadose** | | |
| **Sample Date** | **11/9/2017** | **11/9/2017** | **11/15/2017** | **11/9/2017** | | |
| **% Moisture** | **13.5%** | **26.7%** | **23.6%** | **11.7%** | | |
| **Benzene** | <0.0297 | **0.275** | <0.553 | 1.19 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0297 | **1.34** | **3.61** | **0.0522** | 70.0 | 70.0 |
| **Cumene** | <0.0297 | **1.04** | **1.06** | **0.149** | 2,500.0 | 350.0 |
| **MTBE** | <0.0297 | <0.221 | <0.553 | <0.0336 | 2.0 | 2.0 |
| **Naphthalene** | <0.0594 | **6.37** | 27.9 | <0.0673 | 25.0 | 10.0 |
| **Toluene** | <0.0297 | **0.762** | <0.553 | **0.0588** | 100.0 | 100.0 |
| **Total Xylenes** | <0.0891 | **1.7** | **6.57** | **0.674** | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0297 | **0.923** | 30.8 | **0.12** | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0297 | <0.221 | <0.553 | **0.0548** | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-11B | TB-11C | TB-12A | TB-12B | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **4.0' - 5.0'** | **6.0' - 6.5'** | **2.0' - 2.5'** | **4.0' - 5.0'** | | |
| **Condition** | **Smear** | **Smear** | **Vadose** | **Smear** | | |
| **Sample Date** | **11/9/2017** | **11/15/2017** | **11/9/2017** | **11/9/2017** | | |
| **% Moisture** | **18.8%** | **18.1%** | **11.2%** | **20.1%** | | |
| **Benzene** | 0.697 | 1.26 | <0.0284 | <0.0382 | 0.5 | 0.5 |
| **Ethylbenzene** | **4.27** | **5.17** | <0.0284 | <0.0382 | 70.0 | 70.0 |
| **Cumene** | **2.68** | **1.15** | <0.0284 | <0.0382 | 2,500.0 | 350.0 |
| **MTBE** | <0.179 | <0.169 | <0.0284 | <0.0382 | 2.0 | 2.0 |
| **Naphthalene** | 12.4 | **5.39** | <0.0568 | <0.0764 | 25.0 | 10.0 |
| **Toluene** | **0.26** | **0.546** | <0.0284 | **0.0508** | 100.0 | 100.0 |
| **Total Xylenes** | **3.52** | **12.9** | <0.0852 | <0.115 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | **3.65** | 9.54 | <0.0284 | <0.0382 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.179 | **1.7** | <0.0284 | <0.0382 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

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**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | TB-12C | PW-12A | PW-12B | PW-13A | SHS MSC* | SHS MSC** |
|---|---|---|---|---|---|---|
| **Depth** | **6.0' - 6.5'** | **2.2' - 2.7'** | **4.0' - 5.0'** | **2.0' - 2.5'** | | |
| **Condition** | **Smear** | **Vadose** | **Smear** | **Vadose** | | |
| **Sample Date** | **11/15/2017** | **11/10/2017** | **11/10/2017** | **11/10/2017** | | |
| **% Moisture** | **23.2%** | **11.7%** | **21.1%** | **15.0%** | | |
| **Benzene** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 70.0 | 70.0 |
| **Cumene** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 2,500.0 | 350.0 |
| **MTBE** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 2.0 | 2.0 |
| **Naphthalene** | <0.124 | <0.0714 | <0.0764 | <0.0631 | 25.0 | 10.0 |
| **Toluene** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 100.0 | 100.0 |
| **Total Xylenes** | <0.186 | <0.107 | <0.115 | <0.0947 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.062 | <0.0357 | <0.0382 | <0.0316 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

04/05/19

**Table F-1**
**Site Characterization Activities**
**Quinn's Café Stop Property**
**Soil Sample Analytical Data Summary (mg/kg)**

| Parameter | PW-13B | SHS MSC* | SHS MSC** |
|---|---|---|---|
| **Depth** | **5.0' - 5.5'** | | |
| **Condition** | **Smear** | | |
| **Sample Date** | **11/15/2017** | | |
| **% Moisture** | **8.8%** | | |
| **Benzene** | <0.0316 | 0.5 | 0.5 |
| **Ethylbenzene** | <0.0316 | 70.0 | 70.0 |
| **Cumene** | <0.0316 | 2,500.0 | 350.0 |
| **MTBE** | <0.0316 | 2.0 | 2.0 |
| **Naphthalene** | <0.0633 | 25.0 | 10.0 |
| **Toluene** | <0.0136 | 100.0 | 100.0 |
| **Total Xylenes** | <0.0949 | 1,000.0 | 1,000.0 |
| **1,2,4-TMB** | <0.0316 | 35.0 | 6.2 |
| **1,3,5-TMB** | <0.0316 | 210.0 | 120.0 |

**MTBE** Methyl Tert Butyl Ether
**1,2,4-TMB** 1,2,4-Trimethylbenzene
**1,3,5-TMB** 1,3,5-Trimethylbenzene

PA Act 2 Statewide Health Standards for Non-Residential Used Aquifer setting

Act 2 SHS exceedances - Unsaturated Zone*

Act 2 SHS exceedances - Saturated Zone**

**Condition:**
Vadose: Vadose Zone - Unsaturated MSCs Apply
Smear: Zone of Groundwater Saturation (Smear Zone) - Saturated MSCs Apply
PSZ: Permanently Saturated Zone - Saturated MSCs Apply

# APPENDIX G

Test Boring Logs –Pilot Test Point Installation

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 14, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: SVE-1 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. | TOC/GL |
|---|---|---|---|---|---|
| Soft | 11:25 | 11:48 | 3.9' | Elevation TOC | Surface |
| Drill | 15:00 | 16:05 | 6.0' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | Rec: N/A | 0.0' - 6.0' | Asphalt Surface |
| --- | 0'-5' | | | Soft dig to 3.9' on 01.14.19; | Dry / Damp |
| 1--- | | 0.0 | | medium brown sand and | |
| --- | | | | silt with abundant angular | |
| 2--- | | 0.0 | | cobbles to 3.9', change to | |
| --- | | | | dark brown sand and silt | Damp / Moist |
| 3--- | | 0.0 | | with abundant pulverized | |
| --- | | | | sandstone fragments | |
| 4--- | | 0.0 | | | |
| --- | | | | | |
| 5--- | SS-2 | 0.0 | Rec: N/A | | |
| --- | 5'-10' | | | | |
| 6--- | | 33.7 | | | |
| --- | | | | | |
| 7--- | | | | | |
| --- | | | | | |
| 8--- | | | | | |
| --- | | | | | |
| 9--- | | | | | |
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| 10--- | | | | | |
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| 17--- | | | | | |
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| 18--- | | | | | |
| --- | | | | | |
| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 14, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: SVE-2 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. Elevation TOC | TOC/GL Surface |
|---|---|---|---|---|---|
| | 13:07 | 13:41 | 5.5' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | No odors | 0.0' - 5.5' | Asphalt Surface |
| --- | 0'-5' | | No visual | Soft dig to 5.5' on 01.14.19; | Damp / Moist |
| 1--- | | 0.0 | | dark brown sand and silt | 0.0' - 4.5' |
| --- | | | | with abundant angular | Wet 4.5' - 5.5' |
| 2--- | | 0.0 | | cobbles | |
| --- | | | | | |
| 3--- | | 0.0 | | | |
| --- | | | | | |
| 4--- | | 87 | | | |
| --- | | | | | |
| 5--- | | 102 | | | |
| --- | | | | | |
| 6--- | | | | | |
| --- | | | | | |
| 7--- | | | | | |
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| 8--- | | | | | |
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| 18--- | | | | | |
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| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 14, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: MP-1 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. Elevation TOC | TOC/GL Surface |
|---|---|---|---|---|---|
| Soft | 10:53 | 11:21 | 3.2' | | |
| Drill | 13:38 | 14:17 | 6.0' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | Rec: N/A | 0.0' - 6.0' | Asphalt Surface |
| --- | 0'-5' | | | Soft dig to 3.2' on 01.14.19; | Dry / Damp 0.0' - 4.0' |
| 1--- | | 0.0 | | medium brown and gray | Wet 4.0' - 6.0' |
| --- | | | | sand and silt with abundant | |
| 2--- | | 0.0 | | cobbles to 3.2', change to | |
| --- | | | | gray sand and silt with | |
| 3--- | | 0.0 | | abundant pulverized | |
| --- | | | | sandstone fragments | |
| 4--- | | 87 | | | |
| --- | | | | | |
| 5--- | SS-2 | 84 | Rec: N/A | | |
| --- | 5'-10' | | | | |
| 6--- | | 111 | | | |
| --- | | | | | |
| 7--- | | | | | |
| --- | | | | | |
| 8--- | | | | | |
| --- | | | | | |
| 9--- | | | | | |
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| 10--- | | | | | |
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| 11--- | | | | | |
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| 12--- | | | | | |
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| 16--- | | | | | |
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| 17--- | | | | | |
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| 18--- | | | | | |
| --- | | | | | |
| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 15, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: MP-2 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. Elevation TOC | TOC/GL Surface |
|---|---|---|---|---|---|
| Soft | 11:53 | 12:17 | 5.0' | | |
| Drill | 12:00 | 13:30 | 10.5' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | Rec: N/A | 0.0' - 5.0' | Asphalt Surface |
| --- | 0'-5' | | | Soft dig to 5.0' on 01.14.19; | Damp / Moist to 4.0' |
| 1--- | | 0.0 | | dark brown and gray sand | Moist / Wet 4.0' - 10.5' |
| --- | | | | and silt with pebbles and | |
| 2--- | | 0.0 | | cobbles | |
| --- | | | | | |
| 3--- | | 0.0 | | | |
| --- | | | | | |
| 4--- | | 188 | | | |
| --- | | | | | |
| 5--- | SS-2 | 320 | Rec: N/A | 5.0' - 10.5' | Moist / Wet |
| --- | 5'-10' | | | Medium brown and gray | |
| 6--- | | 81 | | sand and silt with abundant | |
| --- | | | | pulverized sandstone | |
| 7--- | | 27 | | fragments to 8.5', change to | |
| --- | | | | pulverized weathered | Moist / Wet |
| 8--- | | 52 | | bedrock | |
| --- | | | | | |
| 9--- | | 18 | | | |
| --- | | | | | |
| 10--- | | 7 | | | |
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| 11--- | | | | | |
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| 18--- | | | | | |
| --- | | | | | |
| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 15, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: MP-3 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. | TOC/GL |
|---|---|---|---|---|---|
| Soft | 13:50 | 14:18 | 5.0' | Elevation TOC | Surface |
| Drill | 13:50 | 14:57 | 11.0' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | Rec: N/A | 0.0' - 5.0' | Asphalt Surface |
| --- | 0'-5' | | | Soft dig to 5.0' on 01.14.19; | 8" Diameter |
| 1--- | | 0.0 | | medium brown and gray | 0.0' - 7.5' |
| --- | | | | sand and silt with abundant | Wet 4.0' |
| 2--- | | 0.0 | | cobbles | |
| --- | | | | | |
| 3--- | | 0.0 | | | |
| --- | | | | | |
| 4--- | | 72 | | | |
| --- | | | | | |
| 5--- | SS-2 | 200 | Rec: N/A | 5.0' - 11.0' | Moist / Wet |
| --- | 5'-10' | | | Dark brown and gray sand | |
| 6--- | | 53 | | and silt with abundant | |
| --- | | | | pulverized sandstone | |
| 7--- | | 117 | | fragments to 7.5', change to | 6" Air Rotary |
| --- | | | 7.5' - 11.0' | gray sandstone (competent | 7.5' - 11.0' |
| 8--- | | 26 | Hard / Steady | bedrock) | Dry |
| --- | | | No fractures or | | |
| 9--- | | 18 | water bearing | | |
| --- | | | zones | | |
| 10--- | | 29 | | | |
| --- | | | | | |
| 11--- | | 11 | | | |
| --- | | | | | |
| 12--- | | | | | |
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| 13--- | | | | | |
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| 14--- | | | | | |
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| 15--- | | | | | |
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| 16--- | | | | | |
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| 17--- | | | | | |
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| 18--- | | | | | |
| --- | | | | | |
| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

| LaBella Associates, P.C. | TEST BORING LOG |
|---|---|

| | | | |
|---|---|---|---|
| Project: | Quinn's Café Stop | Date Started: January 14, 2019 | |
| Client: | DK & DK, LLC | Date Finished: January 14, 2019 | |
| Purpose: | Pilot Test Point Installations | | |
| Contractor: | Odyssey Environmental | Boring Number: AS-1 | |
| Driller: | Jeff Zelko | Job Number: 2171853 | |
| Inspector: | Kevin Cucura | Sheet: 1 of 1 | |

| TIME LOG | Begin | Finish | Depth | S.W.L. Elevation TOC | TOC/GL Surface |
|---|---|---|---|---|---|
| Soft | 9:37 | 9:58 | 5.0' | | |
| Drill | 10:07 | 11:22 | 11.0' | | |

| Dept (feet) | Sample No's | PID (ppm) | Field Assessment Log | Lithologic Description | Notes |
|---|---|---|---|---|---|
| | SS-1 | | Rec: N/A | 0.0' - 5.0' | Asphalt Surface to 0.5' |
| --- | 0'-5' | | | Soft dig to 5.0" on 01.14.19; | Moist to 4.0' |
| 1--- | | 0.0 | | large stone to 1.0', change | Moist / Wet 4.0' - 5.0' |
| --- | | | | to dark brown sand and silt | |
| 2--- | | 0.0 | | with abundant cobbles to | |
| --- | | | | 4.0', change to discolored | |
| 3--- | | 0.8 | | gray sand and silt with some | |
| --- | | | | pebbles and cobbles | |
| 4--- | | 471 | | | |
| --- | | | | | |
| 5--- | SS-2 | 806 | Rec: N/A | 5.0' - 11.0' | Moist |
| --- | 5'-10' | | | Dark gray and brown sand | Wet 8.0' - 9.5' |
| 6--- | | 722 | | and silt with abundant | |
| --- | | | | pulverized sandstone | |
| 7--- | | 118 | | fragments to 9.5', change to | Very Hard 9.5' - 11.0' |
| --- | | | | pulverized gray sandstone | Dry |
| 8--- | | 27 | | fragments | |
| --- | | | | | |
| 9--- | | 9 | | | |
| --- | | | | | |
| 10--- | | 14 | | | |
| --- | | | | | |
| 11--- | | 121 | | | |
| --- | | | | | |
| 12--- | | | | | |
| --- | | | | | |
| 13--- | | | | | |
| --- | | | | | |
| 14--- | | | | | |
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| 16--- | | | | | |
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| 17--- | | | | | |
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| 18--- | | | | | |
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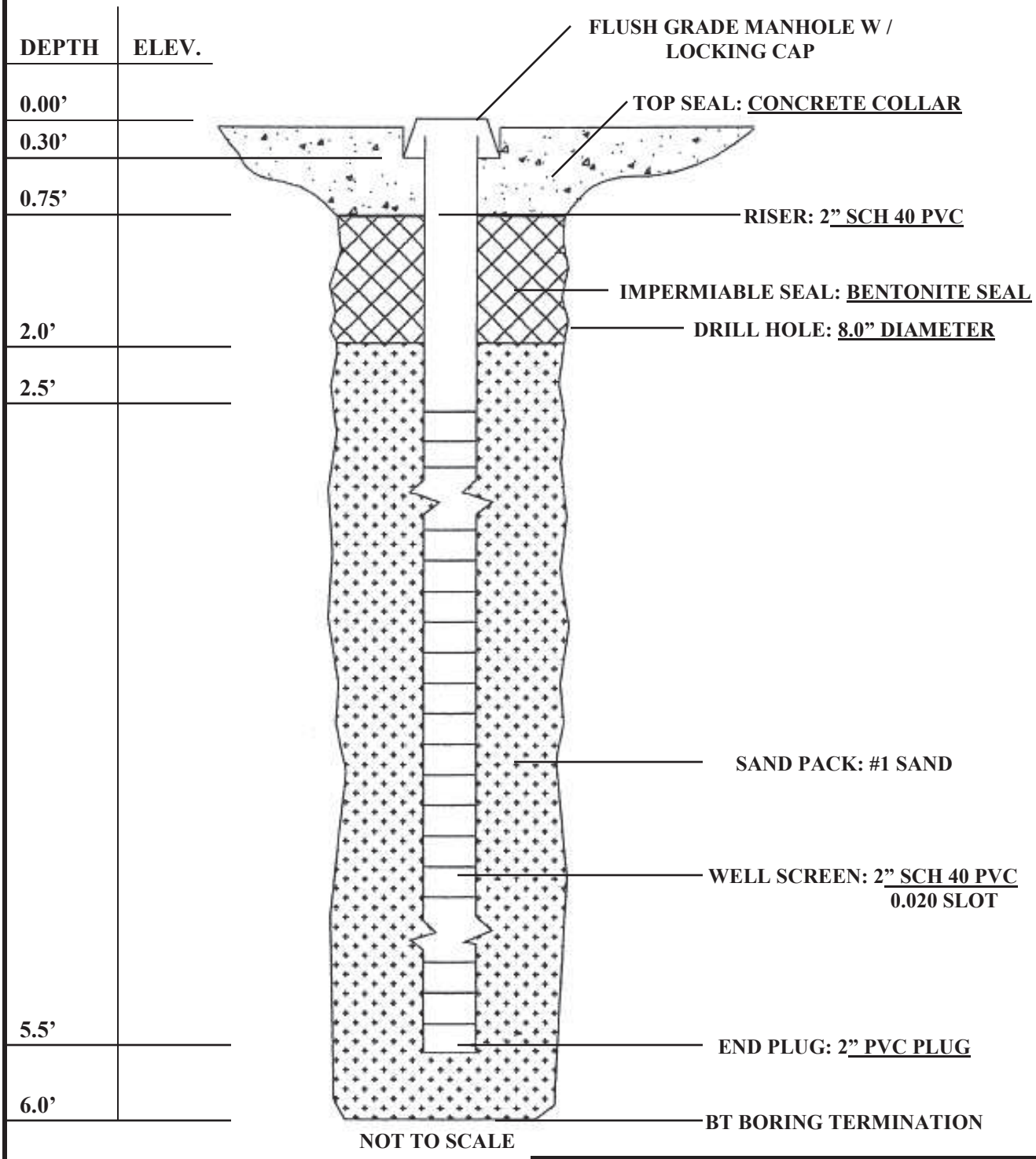
| 19--- | | | | Log Approved By: | |
| --- | | | | Martin Gilgallon, P.G. | |

# APPENDIX H

## Pilot Test Point Construction Details

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL

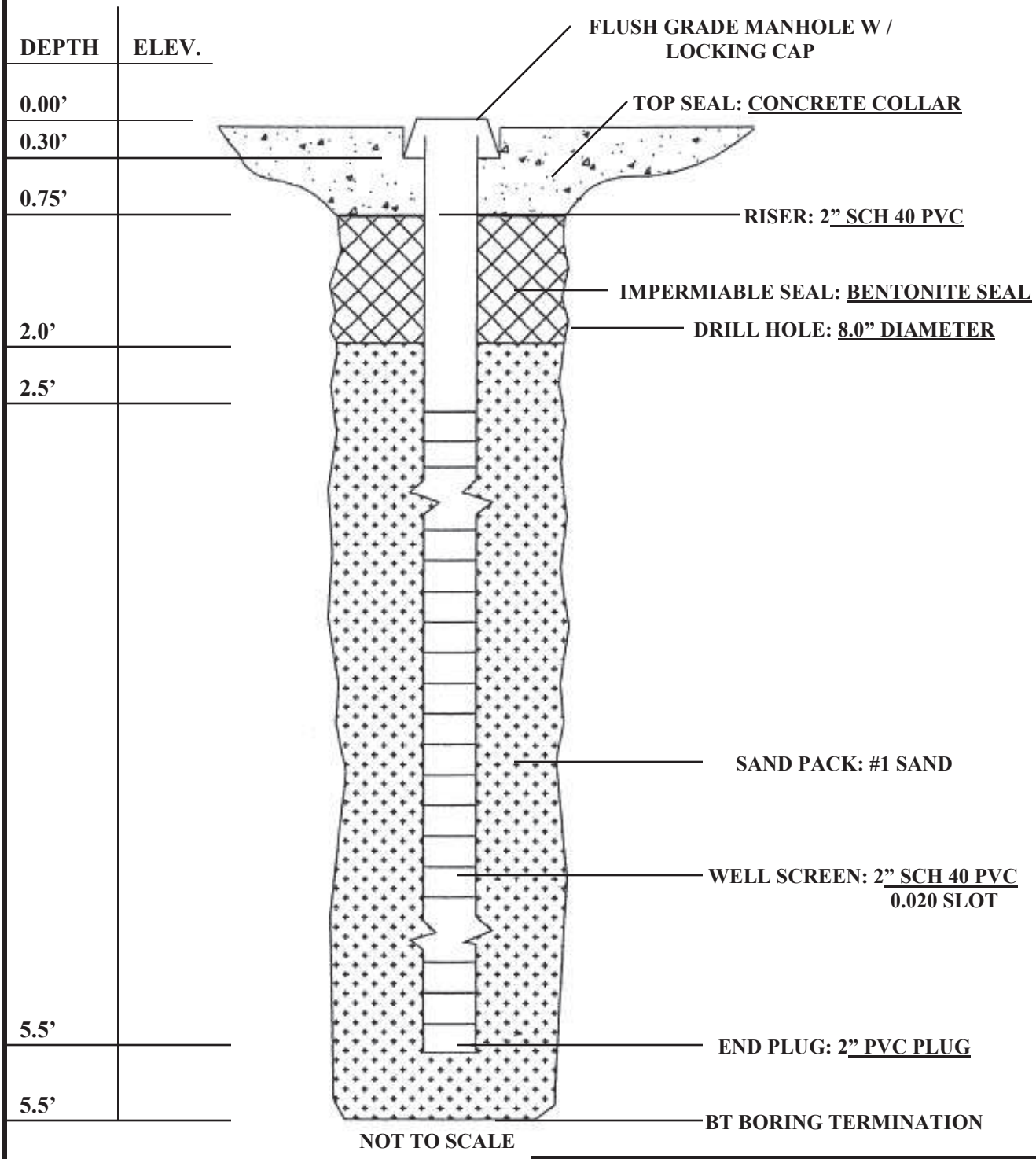



NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN'S CAFÉ STOP**
**TEST POINT SVE-1**

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL

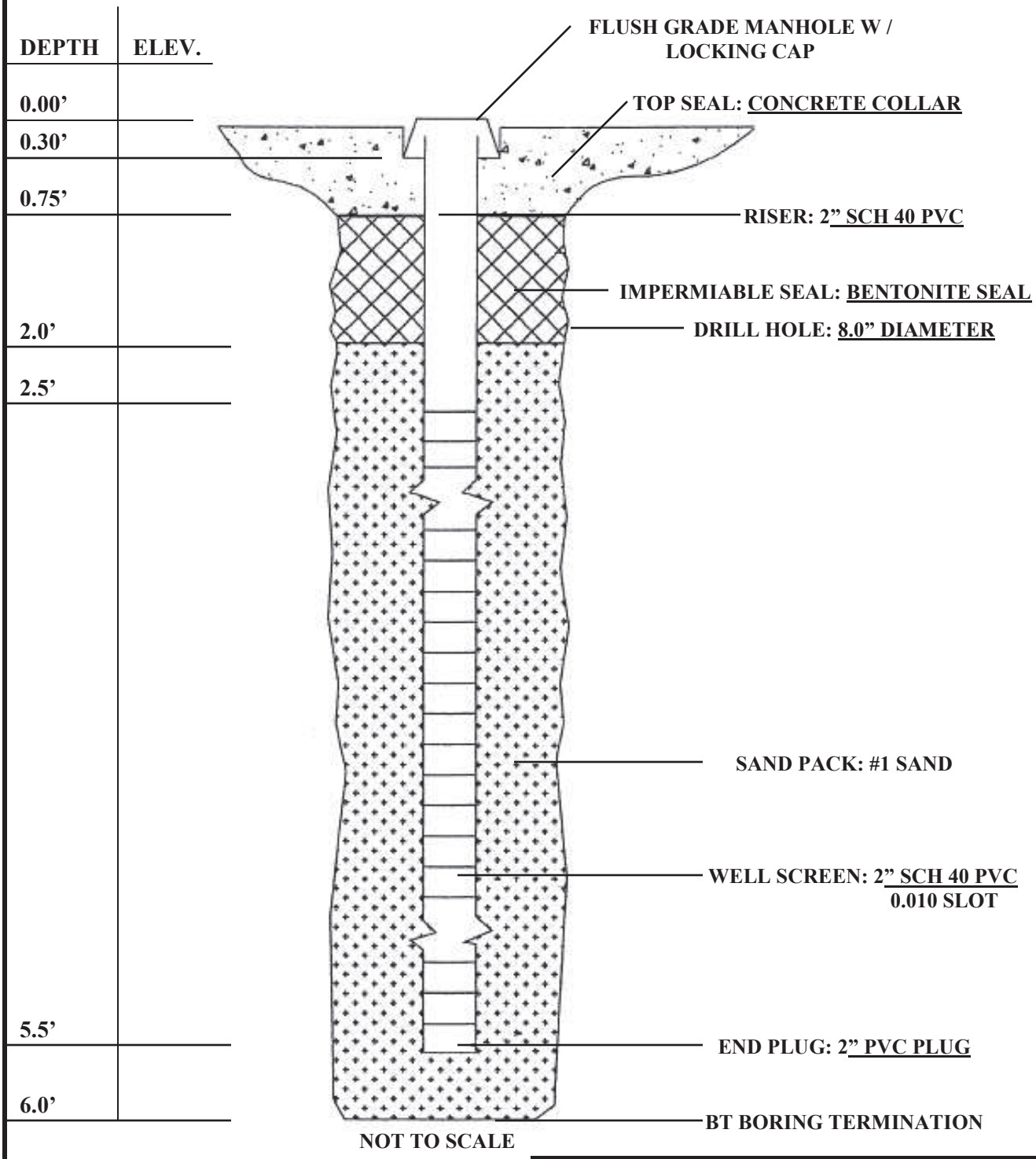



NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN’S CAFÉ STOP**
**TEST POINT SVE-2**

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL

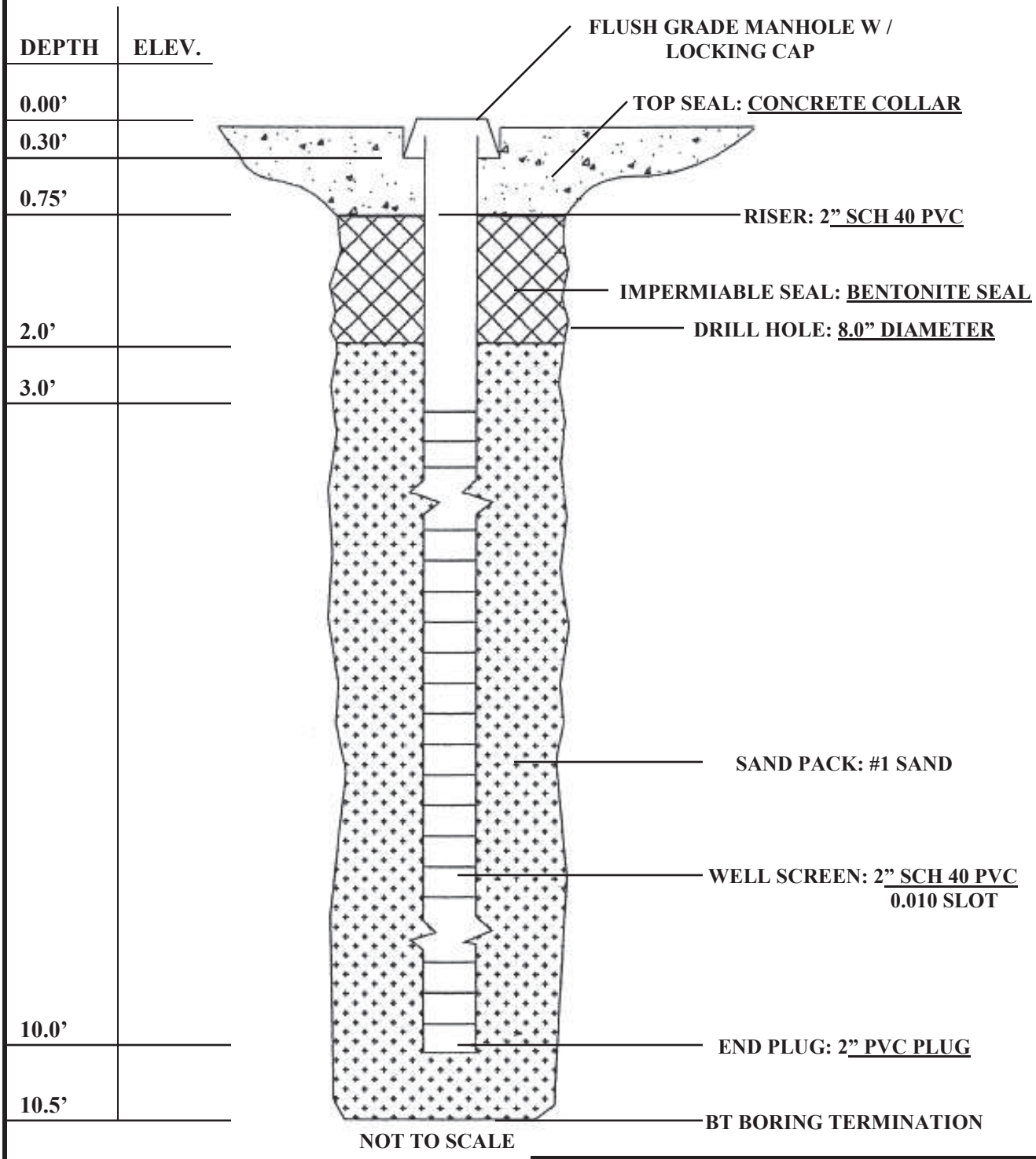



NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN’S CAFÉ STOP**
**MONITORING POINT 1 (MP-1)**

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL

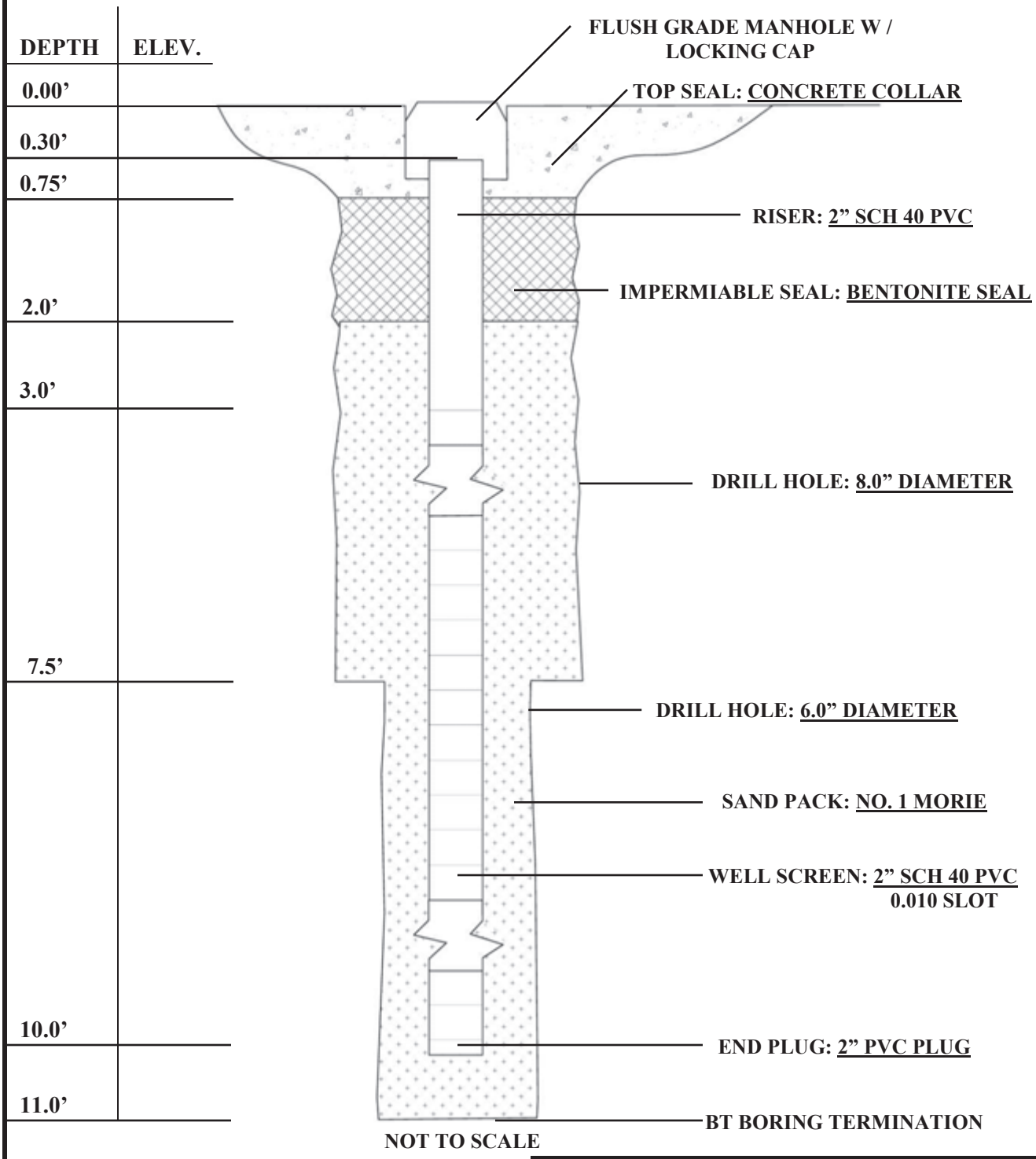



NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN’S CAFÉ STOP**
**MONITORING POINT 2 (MP-2)**

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL



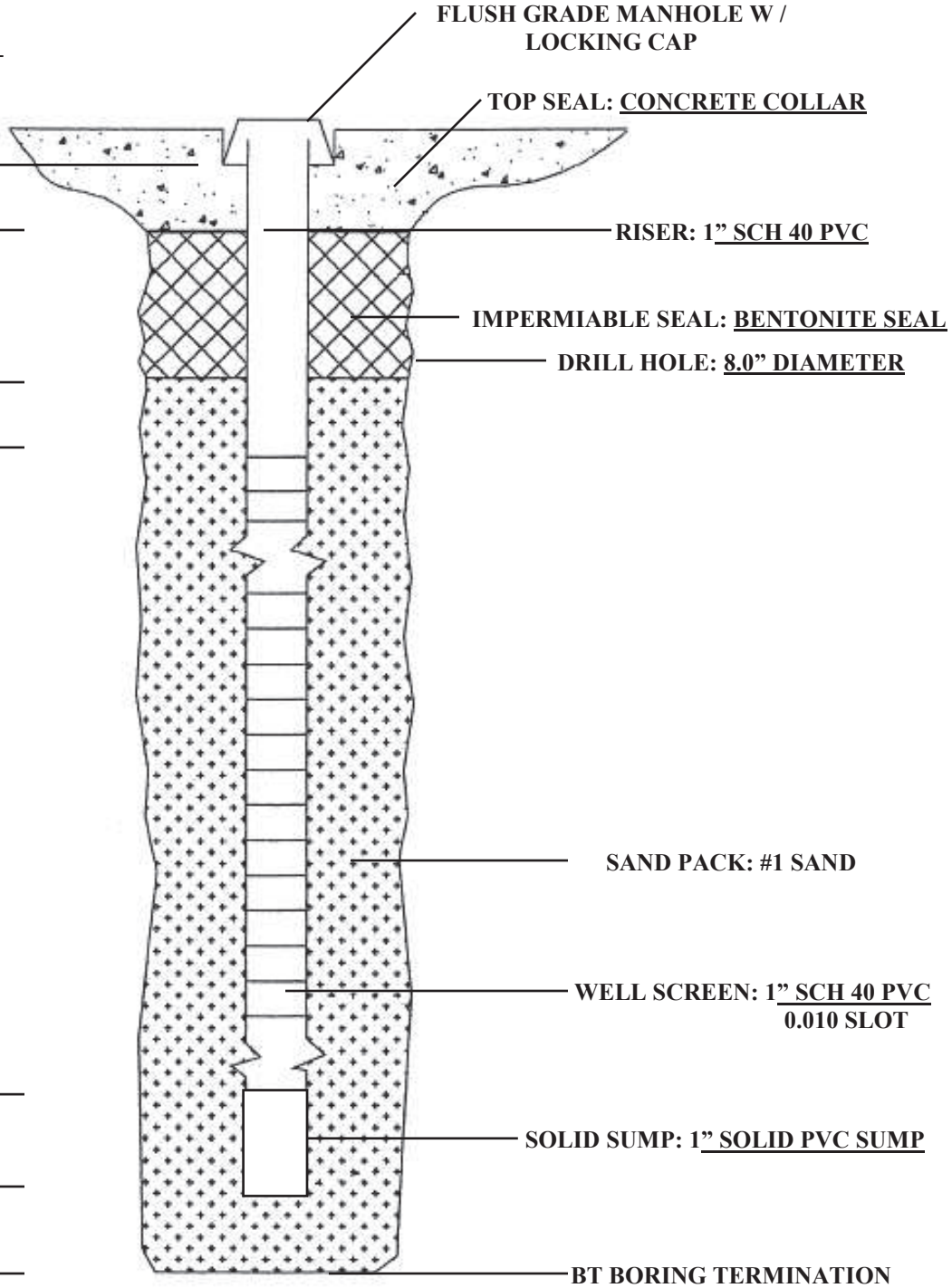

NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN’S CAFÉ STOP PROPERTY**
**MONITORING POINT 3 (MP-3)**

LaBella
Powered by partnership.

# MONITORING WELL CONSTRUCTION DETAIL

| DEPTH | ELEV. |
|---|---|
| 0.00’ | |
| 0.30’ | |
| 0.75’ | |
| 8.0’ | |
| 9.0’ | |
| 10.0’ | |
| 10.5’ | |
| 11.0’ | |




NOT TO SCALE

**PILOT TEST ACTIVITIES**
**QUINN’S CAFÉ STOP**
**AIR SPARGE 1 (AS-1)**

# APPENDIX I

## Photograph Log –Pilot Test Activities

Table I-1

Photograph Log

| Photo | Description | Date |
|---|---|---|
| 1. | Typical view of the subject property during the SVE / AS Pilot Test. | 02/28/19 |
| 2. | View of the SVE blower utilized during the SVE portion of the pilot test. | 02/28/19 |
| 3. | View of the SVE blower placard. | 02/28/19 |
| 4. | Typical view of the setup during the Air Sparge portion of the pilot test. | 02/28/19 |
| 5. | View of the connection at Air Sparge One (AS-1). | 02/28/19 |
| 6. | View of the carbon filter utilized to treat the SVE / AS Pilot Test effluent. | 02/28/19 |

Photo #1
02/28/19
Typical view of the subject property during the SVE / AS Pilot Test.

Photo #2
02/28/19
View of the SVE blower utilized during the SVE portion of the pilot test.

Photo #3
02/28/19
View of the SVE blower placard.

Photo #4
02/28/19
Typical view of the setup during the Air Sparge portion of the pilot test.

Photo #5
02/28/19
View of the connection at Air Sparge One (AS-1).

Photo #6
02/28/19
View of the carbon filter utilized to treat the SVE / AS Pilot Test effluent.

# APPENDIX J

Pilot Test Data Summary Tables

3/1/2019

**Table J-1**
**Quinn's Café Stop Property**
**Soil Vapor Extraction / Air Sparge Pilot Test**
**Baseline Data - Date: 02/27/2019**

| Parameter | SVE-1 | SVE-2 | MP-1 | MP-2 | MP-3 | AS-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TEMP ($^{o}$C)** | **6.0** | **4.6** | **6.3** | **6.3** | **6.1** | **4.0** | **8.3** | **7.6** | **7.5** | **8.5** | **7.6** | **7.7** |
| **D.O. (MG/L)** | 5.54 | 5.98 | 6.25 | 5.48 | 5.92 | 6.36 | 8.10 | 5.03 | 5.05 | 3.95 | 5.53 | 6.93 |
| **VACUUM (IN. H20)** | -0.005 | -0.002 | 0.000 | 0.001 | 0.001 | 0.010 | 0.230 | 0.007 | 0.000 | 0.003 | 0.002 | 0.001 |
| **WATER LEVEL (FEET)** | 4.65 | 3.95 | 4.41 | 3.81 | 3.84 | 5.97 | 4.60 | 4.73 | 4.14 | 5.00 | 3.68 | 3.79 |
| **PID (PPM)** | 106.1 | 3.3 | 4.1 | 4.1 | 9.2 | 2.2 | 0.0 | 14.7 | 6.2 | 55.9 | 73.0 | 4.0 |

**NM = Not Measured**

**Positive Values indicate pressure**

**Negative Values indicate vacuum**

3/1/2019

**Table J-2**
**Quinn's Café Stop Property**
**Soil Vapor Extraction / Air Sparge Pilot Test Soil Vapor Extraction Pilot Test - Date: 02/27/2019**

| Date / Time | Blower Vacuum (IN. HG) | Blower Flow Rate (SCFM) | SVE Point Flow Rate (SCFM) | | SVE PID (PPM) * | | Effluent PID (PPM) ** | Applied Vacuum (IN. H20) | | Bleed Air Valves (Open / Closed) | | | Parameter | SOIL VAPOR EXTRACTION PILOT TEST MONITORING DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SVE-1 | SVE-2 | SVE-1 | SVE-2 | | SVE-1 | SVE-2 | Valve 1 | Valve 2 | Valve 3 | | AS-1 | MP-1 | MP-2 | MP-3 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 |
| 02/27/2019 / 1250 | 2.0 | 125.0 | 2.00 | 24.52 | 12.7 | 64.5 | 22.2 | -3.246 | -2.090 | Open | Open | Open | VACUUM (IN. H2O) | 0.019 | -0.021 | -1.342 | -0.866 | 0.040 | -0.034 | -0.031 | -0.166 | 0.005 | 0.000 |
| | | | | | | | | | | | | | **BASELINE VACUUM (IN. H2O)** | **0.010** | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | WATER LEVEL (FT.) | 6.80 | 4.41 | 3.77 | 3.80 | 4.63 | 4.74 | 4.16 | 4.99 | 3.67 | 3.78 |
| | | | | | | | | | | | | | **BASELINE WATER LEVEL (FT.)** | **5.97** | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| 02/27/2019 / 1405 | 2.8 | 132.0 | 2.11 | 33.50 | 20.4 | 114.2 | 38.8 | -5.000 | -3.090 | 1/2 Open | Open | Closed | VACUUM (IN. H2O) | 0.008 | -0.014 | -1.990 | -1.254 | 0.035 | -0.034 | -0.114 | -0.266 | -0.003 | -0.003 |
| | | | | | | | | | | | | | **BASELINE VACUUM (IN. H2O)** | **0.010** | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | WATER LEVEL (FT.) | 6.72 | 4.40 | 3.75 | 3.80 | 4.64 | 4.74 | 4.15 | 4.97 | 3.68 | 3.74 |
| | | | | | | | | | | | | | **BASELINE WATER LEVEL (FT.)** | **5.97** | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| 02/27/2019 / 1455 | 3.0 | 150.0 | 3.24 | 37.90 | 30.5 | 122.6 | 49.7 | -6.200 | -3.924 | Closed | Open | Closed | VACUUM (IN. H2O) | 0.019 | -0.039 | -2.495 | -1.510 | 0.006 | -0.015 | -0.141 | -0.344 | 0.002 | 0.000 |
| | | | | | | | | | | | | | **BASELINE VACUUM (IN. H2O)** | **0.010** | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | WATER LEVEL (FT.) | 6.65 | 4.42 | 3.72 | 3.80 | 4.64 | 4.75 | 4.17 | 5.00 | 3.67 | 3.77 |
| | | | | | | | | | | | | | **BASELINE WATER LEVEL (FT.)** | **5.97** | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| | | | | | | | | | | | | | **Distance to Nearest SVE Point *** ** | **9.5'** | **10.0'** | **5.0'** | **14.0'** | **43.5'** | **5.5'** | **10.0'** | **36.0'** | **37.5'** | **65.0'** |

**Notes:**

**NM = Not Measured**

**Positive Values indicate pressure**

**Negative Values indicate vacuum**

*** = SVE PID readings are actual PID readings of soil vapor extracted from the respective SVE point.**

**** = Effluent PID readings are from the total system effluent including SVE-1 and bleed air. As such, these values are diluted.**

***** = The nearest monitoring wells to the SVE points are color coded as follows:**

**SVE-1**

**SVE-2**

**Additional Observations:**

02/27/2019 / 1220: Start SVE Blower - 125 SCFM @ 2.0" HG (all bleed air valves open)

02/27/2019 / 1325: Increase vac influence at SVE points by adjusing bleed air valves (Bleed Air Valve 1 - 1/2 Open, Bleed Air Valve 2 - Open, Bleed Air Valve 3 - Closed)

02/27/2019 / 1425: Increase vac influence at SVE points by adjusting bleed air valves (Bleed Air Valve 1 - Closed, Bleed Air Valve 2 - Open, Bleed Air Valve 3 - Closed)

02/27/2019 / 1550: Collect influent vapor samples from SVE-1 and SVE-2 (Sample IDs: SVE-1 Influnet & SVE-2 Influent)

**Table J-3**
**Quinn's Café Stop Property**
**Soil Vapor Extraction / Air Sparge Pilot Test**
**Air Sparge Pilot Test - Date: 02/28/2019**

| Date / Time | Blower Vacuum (IN. HG) | Blower Flow Rate (SCFM) | Compressor @ AS-1 | | SVE Point Flow Rate (SCFM) | | SVE PID (PPM) * | | Effluent PID (PPM) ** | Applied Vacuum (IN. H20) | | Bleed Air Valves (Open / Closed) | | | Parameter | AIR SPARGE PILOT TEST MONITORING DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PSI | CFM | SVE-1 | SVE-2 | SVE-1 | SVE-2 | | SVE-1 | SVE-2 | Valve 1 | Valve 2 | Valve 3 | | MP-1 | MP-2 | MP-3 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 |
| 02/28/2019 / 0945 | 2.0 | 125.0 | 9.5 | 1.34 | 2.08 | 22.70 | 14.9 | 127.8 | 25.9 | -3.523 | -1.897 | Open | Open | Open | VACUUM (IN. H2O) | -0.011 | -1.215 | -0.787 | 0.004 | 0.005 | -0.083 | -0.142 | -0.001 | 0.001 |
| | | | | | | | | | | | | | | | BASELINE VACUUM (IN. H2O) | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | | | WATER LEVEL (FT.) | 4.45 | 3.84 | 3.86 | 4.85 | 4.79 | 4.29 | 5.05 | 3.73 | 3.86 |
| | | | | | | | | | | | | | | | BASELINE WATER LEVEL (FT.) | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| 02/28/2019 / 1045 | 2.8 | 135.0 | 9.5 | 1.10 | 2.08 | 30.33 | 16.9 | 90.5 | 31.5 | -5.320 | -2.743 | 1/2 Open | Open | Closed | Vacuum (IN. H2O) | -0.039 | -1.761 | -1.108 | 0.001 | -0.013 | -0.095 | -0.050 | -0.024 | 0.001 |
| | | | | | | | | | | | | | | | BASELINE VACUUM (IN. H2O) | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | | | Water Level (Feet) | 4.45 | 3.82 | 3.87 | 4.86 | 4.79 | 4.29 | 5.03 | 3.74 | 3.85 |
| | | | | | | | | | | | | | | | BASELINE WATER LEVEL (FT.) | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| 02/28/2019 / 1145 | 3.0 | 150.0 | 9.5 | 0.83 | 5.24 | 38.14 | 11.7 | 105.7 | 35.7 | -6.738 | -3.466 | Closed | Open | Closed | Vacuum (IN. H2O) | -0.035 | -2.176 | -1.335 | 0.020 | -0.018 | -0.116 | -0.223 | -0.003 | 0.003 |
| | | | | | | | | | | | | | | | BASELINE VACUUM (IN. H2O) | **0.000** | **0.001** | **0.001** | **0.230** | **0.007** | **0.000** | **0.003** | **0.002** | **0.001** |
| | | | | | | | | | | | | | | | Water Level (Feet) | 4.45 | 3.83 | 3.89 | 4.83 | 4.80 | 4.29 | 5.08 | 3.73 | 3.85 |
| | | | | | | | | | | | | | | | BASELINE WATER LEVEL (FT.) | **4.41** | **3.81** | **3.84** | **4.60** | **4.73** | **4.14** | **5.00** | **3.68** | **3.79** |
| | | | | | | | | | | | | | | | **Distance to AS-1** | **47.0'** | **9.5'** | **15.5'** | **82.0'** | **35.0'** | **5.5'** | **38.5** | **57.0'** | **55.0'** |
| | | | | | | | | | | | | | | | **Distance to Nearest SVE Point *** ** | **10.0'** | **5.0'** | **14.0'** | **43.5'** | **5.5'** | **10.0'** | **36.0'** | **37.5'** | **65.0'** |

**Notes:**

**NM = Not Measured**

**Positive Values indicate pressure**

**Negative Values indicate vacuum**

*** = SVE PID readings are actual PID readings of soil vapor extracted from the respective SVE point.**

**** = Effluent PID readings are from the total system effluent including SVE-1, SVE-2 and bleed air. As such, these values are diluted.**

***** = The nearest monitoring wells to the SVE points are color coded as follows:**

**SVE-1**

**SVE-2**

**Additional Observations:**

02/28/2019 / 0830: Start SVE Blower - 125 SCFM @ 2.0" HG (all bleed air valves open)

02/28/2019 / 0832 - 0930: Start sparging at AS-1 and adjust pressure (breakout at 11.5 psi - settles in at 9.5 psi)

02/28/2019 / 1015: Increase vac influence at SVE points by adjusing bleed air valves
(Bleed Air Valve 1 - 1/2 Open, Bleed Air Valve 2 - Open, Bleed Air Valve 3 - Closed)

02/28/2019 / 1115: Increase vac influence at SVE points by adjusting bleed air valves
(Bleed Air Valve 1 - Closed, Bleed Air Valve 2 - Open, Bleed Air Valve 3 - Closed)

02/28/2019 / 1210: Collect influent vapor samples from SVE-1 and SVE-2
(Sample IDs: AS /SVE-1 Influnet & AS / SVE-2 Influent)

3/1/2019

**Table J-4**
**Quinn's Café Stop Property**
**Soil Vapor Extraction / Air Sparge Pilot Test**
**Post SVE-AS Pilot Test Data - Date & Time: 02/28/2019 / 1250**

| Parameter | SVE-1 | SVE-2 | MP-1 | MP-2 | MP-3 | AS-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMP (°C) | 6.3 | 4.8 | 6.3 | 6.7 | 6.6 | 3.2 | 7.4 | 7.6 | 6.1 | 6.9 | 7.5 | 7.0 |
| BASELINE TEMP (°C) | 6.0 | 4.6 | 6.3 | 6.3 | 6.1 | 4.0 | 8.3 | 7.6 | 7.5 | 8.5 | 7.6 | 7.7 |
| D.O. (MG/L) | 5.36 | 4.53 | 5.06 | 3.96 | 4.19 | 13.58 | 6.54 | 4.54 | 5.05 | 6.46 | 4.50 | 5.56 |
| BASELINE D.O. (MG/L) | 5.54 | 5.98 | 6.25 | 5.48 | 5.92 | 6.36 | 8.10 | 5.03 | 5.05 | 3.95 | 5.53 | 6.93 |
| VACUUM (IN. H20) | -0.003 | -0.004 | 0.009 | 0.000 | 0.000 | 0.000 | 0.006 | -0.003 | -0.004 | -0.002 | 0.009 | 0.001 |
| BASELINE VACUUM (IN. H2O) | -0.005 | -0.002 | 0.000 | 0.001 | 0.001 | 0.010 | 0.230 | 0.007 | 0.000 | 0.003 | 0.002 | 0.001 |
| VACUUM INFLUENCE @ END OF SVE ONLY TEST (IN. H2O) | Extraction Point | Extraction Point | -0.039 | -2.495 | -1.510 | 0.019 | 0.006 | -0.015 | -0.141 | -0.344 | 0.002 | 0.00 |

NM = Not Measured

Positive Values indicate pressure

Negative Values indicate vacuum

3/1/2019

**Table J-4**
**Quinn's Café Stop Property**
**Soil Vapor Extraction / Air Sparge Pilot Test**
**Post SVE-AS Pilot Test Data - Date & Time: 02/28/2019 / 1250**

| Parameter | SVE-1 | SVE-2 | MP-1 | MP-2 | MP-3 | AS-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER LEVEL (FEET) | 4.56 | 4.00 | 4.44 | 3.86 | 3.90 | 5.10 | 4.86 | 4.78 | 4.32 | 5.04 | 3.71 | 3.87 |
| BASELINE WATER LEVEL (FEET) | 4.65 | 3.95 | 4.41 | 3.81 | 3.84 | 5.97 | 4.60 | 4.73 | 4.14 | 5.00 | 3.68 | 3.79 |
| WATER LEVEL @ END OF SVE / AIR SPARGE TEST (FEET) | Extraction Point | Extraction Point | 4.45 | 3.83 | 3.89 | Injection Point | 4.83 | 4.80 | 4.29 | 5.08 | 3.73 | 3.85 |
| PID (PPM) | 111.0 | 0.0 | 18.4 | 1.8 | 57.8 | 202.5 | 0.0 | 46.2 | 2.4 | 9.2 | 113.2 | 0.00 |
| BASELINE PID (PPM) | 106.1 | 3.3 | 4.1 | 4.1 | 9.2 | 2.2 | 0.0 | 14.7 | 6.2 | 55.9 | 73.0 | 4.0 |

**NM = Not Measured**

**Positive Values indicate pressure**

**Negative Values indicate vacuum**

# APPENDIX K

Pilot Test TO-15 Analytical Summary Table

&

Laboratory Analytical Data Sheets

**Table K-1**
**Quinn's Café Stop Property**
**SVE / AS Pilot Test**
**Influent Vapor Data**

| Parameter | SVE-1 Influent [ug/m$^3$] | SVE-2 Influent [ug/m$^3$] | AS SVE-1 Influent [ug/m$^3$] | AS SVE-2 Influent [ug/m$^3$] |
|---|---|---|---|---|
| 1,2,4-TMB | **78** | <250 | **68** | **160** |
| 1,3,5-TMB | **240** | **81** | **130** | **210** |
| Benzene | **340** | **2,400** | **130** | **200** |
| Cumene | **96** | **370** | **74** | **390** |
| Ethylbenzene | **1,100** | **810** | **960** | **1,300** |
| m&p Xylenes | **5,400** | **3,900** | **4,500** | **7,100** |
| MTBE | <180 | <180 | <180 | <180 |
| Naphthalene | <260 | <260 | <260 | <7.9 |
| o-Xylene | **2,800** | **950** | **2,200** | **2,200** |
| Toluene | **1,900** | **15,000** | **940** | **14,000** |
| **Total VOCs** | **11,954** | **23,511** | **9,002** | **25,660** |

# CENTEK LABORATORIES, LLC

143 Midler Park Drive * Syracuse, NY 13206
Phone (315) 431-9730 * Emergency 24/7 (315) 416-2752
NYSDOH ELAP Certificate No. 11830


## Analytical Report

Kevin Cucura
LaBella - Scranton
1000 Dunham Drive, Suite B
Dunmore, PA 18512

TEL: 570-342-3101
FAX
RE: Quinn's Café Stop Property

Thursday, March 07, 2019
Order No.: C1903004

Dear Kevin Cucura:

Centek Laboratories, LLC received 4 sample(s) on 3/1/2019 for the analyses presented in the following report.

I certify that this data package is in compliance with the terms and conditions of the Contract, both technically and for completeness. Release of the data contained in this hardcopy data package and/or in the computer readable data submitted has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Centek Laboratories performs all analyses according to EPA, NIOSH or OSHA-approved analytical methods. Centek Laboratories is dedicated to providing quality analyses and exceptional customer service. All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objective except as indicated in the case narrative. All samples were received and analyzed within the EPA recommended holding times. Test results are not Method Blank (MB) corrected for contamination.

We do our best to make our reporting format clear and understandable and hope you are thoroughly satisfied with our services. Please contact your client service representative at (315) 431-9730 or myself, if you would like any additional information regarding this report.

Thank you for using Centek Laboratories. This report can not be reproduced except in its entirety, without prior written authorization.

Sincerely,

William Dobbin
Lead Technical Director

Disclaimer: The test results and procedures utilized, and laboratory interpretations of the data obtained by Centek as contained in this report are believed by Centek to be accurate and reliable

for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of Centek for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages. ELAP does not offer certification for the following parameters by this method at present time, they are: 4-ethyltoluene, ethyl acetate, propylene, Tetrahydrofuran, 4-PCH, sulfur derived and silcon series compounds.

## Centek Laboratories, LLC Terms and Conditions

### Sample Submission

All samples sent to Centek Laboratories should be accompanied by our Request for Analysis Form or Chain of Custody Form. A Chain of Custody will be provided with each order shipped for all sampling events, or if needed, one is available at our website www.CentekLabs.com. Samples received after 3:00pm are considered to be a part of the next day's business.

### Sample Media

Samples can be collected in an canister or a Tedlar bag. Depending on your analytical needs, Centek Laboratories may receive a bulk, liquid, soil or other matrix sample for headspace analysis.

### Blanks

Every sample is run with a surrogate or tracer compound at a pre-established concentration. The surrogate compound run with each sample is used as a standard to measure the performance of each run of the instrument. If required, a Minican can be provided containing nitrogen to be run as a trip blank with your samples.

### Sampling Equipment

Centek Laboratories will be happy to provide the canisters to carry-out your sampling event at no charge. The necessary accessories, such as regulators, tubing or personal sampling belts, are also provided to meet your sampling needs. The customer is responsible for all shipping charges to the client's destination and return shipping to the laboratory. Client assumes all responsibility for lost, stolen and any damages of equipment.

### Turn Around time (TAT)

Centek Laboratories will provide results to its clients in one business-week by 6:00pm EST after receipt of samples. For example, if samples are received on a Monday they are due on the following Monday by 6:00pm EST. Results are faxed or emailed to the requested location indicated on the Chain of Custody. Non-routine analysis may require more than the one business-week turnaround time. Please confirm non-routine sample turnaround times.

### Reporting

Results are emailed or faxed at no additional charge. A hard copy of the result report is mailed within 24 hours of the faxing or emailing of your results. Cat "B" like packages are within 3-4 weeks from time of analysis. Standard Electronic Disk Deliverables (EDD) is also available at no additional charge.

### Payment Terms

Payment for all purchases shall be due within 30 days from date of invoice. The client agrees to pay a finance charge of 1.5% per month on the overdue balance and cost of collection, including attorney fees, if collection proceedings are necessary. You must have a completed credit

application on file to extend credit. Purchase orders or checks information must be submitted for us to release results

## Rush Turnaround Samples

Expedited turn around times is available. Please confirm rush turnaround times with Client Services before submitting samples.

Applicable Surcharges for Rush Turnaround Samples:
Same day TAT = 200%
Next business day TAT by Noon = 150%
Next business day TAT by 6:00pm = 100%
Second business day TAT by 6:00pm = 75%
Third business day TAT by 6:00pm = 50%
Fourth business day TAT by 6:00pm = 35%
Fifth business day = Standard

## Statement of Confidentiality

Centek Laboratories, LLC is aware of the importance of the confidentiality of results to many of our clients. Your name and data will be held in the strictest of confidence. We will not accept business that may constitute a conflict of interest. We commonly sign Confidential Nondisclosure Agreements with clients prior to beginning work. All research, results and reports will be kept strictly confidential. Secrecy Agreements and Disclosure Statements will be signed for the client if so specified. Results will be provided only to the addressee specified on the Chain of Custody Form submitted with the samples unless law requires release. Written permission is required from the addressee to release results to any other party.

## Limitation on Liability

Centek Laboratories, LLC warrants the test results to be accurate to the methodology and sample type for each sample submitted to Centek Laboratories, LLC. In no event shall Centek Laboratories, LLC be liable for direct, indirect, special, punitive, incidental, exemplary or consequential damages, or any damages whatsoever, even if Centek Laboratories, LLC has been previously advised of the possibility of such damages whether in an action under contract, negligence, or any other theory, arising out of or in connection with the use, inability to use or performance of the information, services, products and materials available from the laboratory or this site. These limitations shall apply notwithstanding any failure of essential purpose of any limited remedy. Because some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of liability for consequential or incidental damages, the above limitations may not apply to you. This is a comprehensive limitation of liability that applies to all damages of any kind, including (without limitation) compensatory, direct, indirect or consequential damages, loss of data, income or profit and or loss of or damage to property and claims of third parties.

# CENTEK LABORATORIES, LLC

**Date:** *13-Mar-19*

**CLIENT:** LaBella - Scranton

**Project:** Quinn's Café Stop Property

**Lab Order:** C1903004

## CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Centek Laboratories, LLC SOP TS-80
Compendium of Methods for the Determination of Toxic Organic Compounds, Compendium Method TO-15, January 1999

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objective except as indicated in the corrective action report(s). All samples were received and analyzed within the EPA recommended holding times. Test results are not Method Blank (MB) corrected for contamination.

NYSDEC ASP samples:
Canisters should be evacuated to a reading of less than or equal to 50 millitorr prior to shipment to sampling personnel. The vacuum in the canister will be field checked prior to sampling, and must read 28" of Hg (±2", vacuum, absolute) before a sample can be collected. After the sample has been collected, the pressure of the canister will be read and recorded again, and must be 5" of Hg (±1", vacuum, absolute) for the sample to be valid. Once received at the laboratory, the canister vacuum should be confirmed to be 5" of Hg,±1". Please record and report the pressure/vacuum of received canisters on the sample receipt paperwork. A pressure/vacuum reading should also be taken just prior to the withdrawal of sample from the canister, and recorded on the sample preparation log sheet. All regulators are calibrated to meet these requirements before they leave the laboratory. However, due to environmental conditions and use of the equipment Centek can not guarantee that this criteria can always be achieved.

# Centek Labs - Chain of Custody

Centek Laboratories
143 Midler Park Drive
Syracuse, NY 13206
315-431-9730
www.CentekLabs.com
Vapor Intrusion & IAQ

Site Name: Quinn's Cafe' Stop Property
Project: 171845
PO#:
Quote # Q-
Canister Order #:

| Detection Limit | Report Level |
|---|---|
| ☒ 5ppbv | ☒ Level I |
| ☐ 1ug/M3 | ☐ Level II |
| ☐ 1ug/M3 + 0.2 NYS | ☐ Cat "B" Like |
| ☐ | ☐ |

| TAT Turnaround Time: | Check One | Rush TAT Surcharge % | Due Date: |
|---|---|---|---|
| 5 Business Days | ☒ | 0% | |
| 4 Business Days | ☐ | 25% | |
| 3 Business Days | ☐ | 50% | |
| 2 Business Days | ☐ | 75% | |
| *Next Day by 5pm | ☐ | 100% | |
| *Next Day by Noon | ☐ | 150% | |
| *Same Day | ☐ | 200% | |

*For Same and Next Day TAT Please Notify Lab

Company: LaBella Associates
Report to:
Address: 1000 Dunham Drive - Suite B
City, State, Zip Dunmore PA 18512
Email: kcuccia@labellapc.com
Phone: 570.487.1959

Company: ☒ Check Here If Same:
Invoice to:
Address:
City, State, Zip
Email:
Phone:

| Sample ID | Date Sampled | Canister Number | Regulator Number | Analysis Request | Field Vacuum Start / Stop | Labs Vacuum** Rec'd/Analysis | Comments |
|---|---|---|---|---|---|---|---|
| SVE-1 Influent | 2.27.19 | 1428 | — | TO-15 (PADEP SHORT LIST UNLESS GAS; DIESEL) | -26"Hg / +3"Hg | 4 / +3 | |
| SVE-2 Influent | 2.27.19 | 1406 | — | TO-15 | -26"Hg / +3"Hg | 4 / +4 | |
| AS SVE-1 Influent | 2.28.19 | 25 | — | TO-15 | -26"Hg / +3.5"Hg | 6 / +5 | |
| AS SVE-2 Influent | 2.28.19 | 1432 | — | TO-15 | -26"Hg / +3.5"Hg | 4 / +4 | |
| | | | | | / | / | |
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| | | | | | / | / | |
| | | | | | / | / | |

| Chain of Custody | Print Name | Signature | Date/Time |
|---|---|---|---|
| Sampled by: | Doug Stamp | Doug Stamp | 2-27-19/1500 |
| Relinquished by: | Doug Stamp | Doug Stamp | 3-1-19/1210 |
| Received at Lab by: | Jeff Scala | | 3-1-19 12 10 |

Courier: CIRCLE ONE
FedEx UPS Pickup/Dropoff

**For LAB USE ONLY
Work Order # C1903004

***Chain of Custody must be completed in full. Lack of any missing information will affect your Turn Around Times (TAT)

*** By signing Centek Labs Chain of Custody, you are accepting Centek Labs Terms and Conditions listed on the reverse side.

# CENTEK LABORATORIES, LLC

## Sample Receipt Checklist

Client Name: **LABELLA - SCRANTON** Date and Time Received: **3/1/2019**

Work Order Number **C1903004** Received by: JS

Checklist completed by: Robin Pushkin 3/1/19 (Signature / Date) Reviewed by: WD 3/4/19 (Initials / Date)

Matrix: Carrier name: FedEx Ground

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shippping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Water - VOA vials have zero headspace? | No VOA vials submitted ☑ | Yes ☐ | No ☐ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | |

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section bel

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

**Date:** *13-Mar-19*

# CENTEK LABORATORIES, LLC

**CLIENT:** LaBella - Scranton
**Project:** Quinn's Café Stop Property
**Lab Order:** C1903004

## Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Tag Number | Collection Date | Date Received |
|---|---|---|---|---|
| C1903004-001A | SVE-1 Influent | 1428 | 2/27/2019 | 3/1/2019 |
| C1903004-002A | SVE-2 Influent | 1406 | 2/27/2019 | 3/1/2019 |
| C1903004-003A | AS SVE-1 Influent | 25 | 2/28/2019 | 3/1/2019 |
| C1903004-004A | AS SVE-2 Influent | 1432 | 2/28/2019 | 3/1/2019 |

## Centek Laboratories, LLC

*13-Mar-19*

**Lab Order:** C1903004
**Client:** LaBella - Scranton
**Project:** Quinn's Café Stop Property

# DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Name | TCLP Date | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|
| C1903004-001A | SVE-1 Influent | 2/27/2019 | Air | 5ppb by Method TO15 | | | 3/4/2019 |
| C1903004-002A | SVE-2 Influent | | | 5ppb by Method TO15 | | | 3/5/2019 |
| | | | | 5ppb by Method TO15 | | | 3/4/2019 |
| C1903004-003A | AS SVE-1 Influent | 2/28/2019 | | 5ppb by Method TO15 | | | 3/4/2019 |
| C1903004-004A | AS SVE-2 Influent | | | 5ppb by Method TO15 | | | 3/5/2019 |
| | | | | 5ppb by Method TO15 | | | 3/5/2019 |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | SVE-1 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1428 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/27/2019 |
| **Lab ID:** | C1903004-001A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 78 | 250 | J | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| 1,3,5-Trimethylbenzene | 240 | 250 | J | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Benzene | 340 | 160 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Cumene | 96 | 250 | J | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Ethylbenzene | 1100 | 220 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| m&p-Xylene | 5400 | 430 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Methyl tert-butyl ether | < 180 | 180 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Naphthalene | < 260 | 260 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| o-Xylene | 2800 | 220 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |
| Toluene | 1900 | 190 | | ug/m3 | 10 | 3/4/2019 8:36:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | SVE-2 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1406 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/27/2019 |
| **Lab ID:** | C1903004-002A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | < 250 | 250 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| 1,3,5-Trimethylbenzene | 81 | 250 | J | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Benzene | 2400 | 160 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Cumene | 370 | 250 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Ethylbenzene | 810 | 220 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| m&p-Xylene | 3900 | 430 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Methyl tert-butyl ether | < 180 | 180 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Naphthalene | < 260 | 260 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| o-Xylene | 950 | 220 | | ug/m3 | 10 | 3/4/2019 9:49:00 PM |
| Toluene | 15000 | 900 | | ug/m3 | 48 | 3/5/2019 12:46:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | AS SVE-1 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 25 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/28/2019 |
| **Lab ID:** | C1903004-003A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 68 | 250 | J | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| 1,3,5-Trimethylbenzene | 130 | 250 | J | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Benzene | 130 | 160 | J | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Cumene | 74 | 250 | J | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Ethylbenzene | 960 | 220 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| m&p-Xylene | 4500 | 430 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Methyl tert-butyl ether | < 180 | 180 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Naphthalene | < 260 | 260 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| o-Xylene | 2200 | 220 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |
| Toluene | 940 | 190 | | ug/m3 | 10 | 3/4/2019 11:03:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | AS SVE-2 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1432 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/28/2019 |
| **Lab ID:** | C1903004-004A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 160 | 250 | J | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| 1,3,5-Trimethylbenzene | 210 | 250 | J | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Benzene | 2000 | 160 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Cumene | 390 | 250 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Ethylbenzene | 1300 | 220 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| m&p-Xylene | 7100 | 430 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Methyl tert-butyl ether | < 180 | 180 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Naphthalene | < 7.9 | 7.9 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| o-Xylene | 2200 | 220 | | ug/m3 | 10 | 3/5/2019 12:16:00 AM |
| Toluene | 14000 | 720 | | ug/m3 | 38 | 3/5/2019 1:23:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

**Qualifiers:**

| | | | |
|---|---|---|---|
| ** | Quantitation Limit | . | Results reported are not blank corrected |
| B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit |
| JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection |
| S | Spike Recovery outside accepted recovery limits | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | SVE-1 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1428 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/27/2019 |
| **Lab ID:** | C1903004-001A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **FIELD PARAMETERS** | | **FLD** | | | | Analyst: |
| Lab Vacuum In | +4 | | | "Hg | | 3/1/2019 |
| Lab Vacuum Out | -30 | | | "Hg | | 3/1/2019 |
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 16 | 50 | J | ppbV | 10 | 3/4/2019 8:36:00 PM |
| 1,3,5-Trimethylbenzene | 50 | 50 | J | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Benzene | 110 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Cumene | 20 | 50 | J | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Ethylbenzene | 260 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| m&p-Xylene | 1200 | 100 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Methyl tert-butyl ether | < 50 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Naphthalene | < 50 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| o-Xylene | 630 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |
| Toluene | 510 | 50 | | ppbV | 10 | 3/4/2019 8:36:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | SVE-2 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1406 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/27/2019 |
| **Lab ID:** | C1903004-002A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **FIELD PARAMETERS** | | **FLD** | | | | Analyst: |
| Lab Vacuum In | +4 | | | "Hg | | 3/1/2019 |
| Lab Vacuum Out | -30 | | | "Hg | | 3/1/2019 |
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | < 50 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| 1,3,5-Trimethylbenzene | 16 | 50 | J | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Benzene | 750 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Cumene | 76 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Ethylbenzene | 190 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| m&p-Xylene | 900 | 100 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Methyl tert-butyl ether | < 50 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Naphthalene | < 50 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| o-Xylene | 220 | 50 | | ppbV | 10 | 3/4/2019 9:49:00 PM |
| Toluene | 4000 | 240 | | ppbV | 48 | 3/5/2019 12:46:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
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# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | AS SVE-1 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 25 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/28/2019 |
| **Lab ID:** | C1903004-003A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **FIELD PARAMETERS** | | **FLD** | | | | Analyst: |
| Lab Vacuum In | +6 | | | "Hg | | 3/1/2019 |
| Lab Vacuum Out | -30 | | | "Hg | | 3/1/2019 |
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 14 | 50 | J | ppbV | 10 | 3/4/2019 11:03:00 PM |
| 1,3,5-Trimethylbenzene | 27 | 50 | J | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Benzene | 40 | 50 | J | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Cumene | 15 | 50 | J | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Ethylbenzene | 220 | 50 | | ppbV | 10 | 3/4/2019 11:03:00 PM |
| m&p-Xylene | 1000 | 100 | | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Methyl tert-butyl ether | < 50 | 50 | | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Naphthalene | < 50 | 50 | | ppbV | 10 | 3/4/2019 11:03:00 PM |
| o-Xylene | 520 | 50 | | ppbV | 10 | 3/4/2019 11:03:00 PM |
| Toluene | 250 | 50 | | ppbV | 10 | 3/4/2019 11:03:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# Centek Laboratories, LLC

**Date:** *08-Mar-19*

| | | | |
|---|---|---|---|
| **CLIENT:** | LaBella - Scranton | **Client Sample ID:** | AS SVE-2 Influent |
| **Lab Order:** | C1903004 | **Tag Number:** | 1432 |
| **Project:** | Quinn's Café Stop Property | **Collection Date:** | 2/28/2019 |
| **Lab ID:** | C1903004-004A | **Matrix:** | AIR |

| Analyses | Result | **Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **FIELD PARAMETERS** | | **FLD** | | | | Analyst: |
| Lab Vacuum In | +4 | | | "Hg | | 3/1/2019 |
| Lab Vacuum Out | -30 | | | "Hg | | 3/1/2019 |
| **5PPB BY METHOD TO15** | | **TO-15** | | | | Analyst: **WD** |
| 1,2,4-Trimethylbenzene | 32 | 50 | J | ppbV | 10 | 3/5/2019 12:16:00 AM |
| 1,3,5-Trimethylbenzene | 43 | 50 | J | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Benzene | 640 | 50 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Cumene | 79 | 50 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Ethylbenzene | 310 | 50 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| m&p-Xylene | 1600 | 100 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Methyl tert-butyl ether | < 50 | 50 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Naphthalene | < 1.5 | 1.5 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| o-Xylene | 500 | 50 | | ppbV | 10 | 3/5/2019 12:16:00 AM |
| Toluene | 3700 | 190 | | ppbV | 38 | 3/5/2019 1:23:00 PM |

**NOTES:**
The reporting limits were raised due to the presence of gasoline in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | ** | Quantitation Limit | . | Results reported are not blank corrected | |
| | B | Analyte detected in the associated Method Blank | E | Estimated Value above quantitation range | |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limit | |
| | JN | Non-routine analyte. Quantitation estimated. | ND | Not Detected at the Limit of Detection | |
| | S | Spike Recovery outside accepted recovery limits | | | |

# APPENDIX L

## Design Calculations

## Quinn's Café
## Preliminary Design Calculations - SVE System

**INPUT VALUES IN ORANGE CELLS**

| CONVERSIONS | | | FACTORS | |
|---|---|---|---|---|
| 3.281 ft | 1 m | | Fitting K | |
| 1 lb | 0.454 kg | | 90 degree elbow (R/D)=1 | 0.75 |
| 10.764 ft2 | 1 m2 | | Tee, as elbow | 1 |
| 1 cfm | 7.48 gpm | | Relative roughness of PVC pi | 0.000007 m |
| | | | frcition factor PVC | 0.00000066 ft |

**AIR FLOW**

| | | | |
|---|---|---|---|
| Diameter of pipe | D | 0.33 | ft |
| Area of SVE Influence (approximate) | A | 8000 | ft2 |
| Thickness of SVE Influence (approximate) | h | 5.000 | ft |
| Porosity (assumed) | n | 0.3 | |
| Volume air space (per system) | V | 12000 | ft3 |

***typically design around 1-2 air turnovers per hour***

**AIR TURNOVER**

| | | |
|---|---|---|
| 1/2hr | 100.00 | cfm |
| 1/hr | 200.00 | cfm |
| 2/hr | 400.00 | cfm |

Select fan and determine pressure ("wc or "Hg) at calculated flowrate (CFM)

**AREA & VELOCITY**

$$Velocity\left(\frac{ft}{s}\right) = \frac{Volumetric\ Flow\ Rate\ (\frac{ft3}{s})}{Area\ (ft2)}$$

| | | | |
|---|---|---|---|
| Velocity | V | 76.39 | ft/s |
| Volumetric flow rate | Q | 6.67 | ft3/s |
| Area | A | 0.09 | ft2 |

Utilize Max. Flow Rate of 400 CFM for Design Basis and Pressure Drop

$$A = \pi r^2$$

| | | | |
|---|---|---|---|
| Area | A | 0.09 | ft2 |
| pi | π | 3.14 | |
| r squared | r2 | 0.03 | ft2 |

**HEAD LOSS**

$$h_L = K\frac{V^2}{2g} \qquad hf = f\frac{L}{D}\frac{V^2}{2g} \qquad hf = 0.2083\left(\frac{100}{C}\right)^{1.852} * \frac{Q^{1.852}}{d\ \hat{}\ 4.8655}$$

FITTING 1: ELBOW — # ELBOWS

| | | | | |
|---|---|---|---|---|
| Headloss | $h_L$ | 67.97 | ft | 12 |
| K value | K | 0.75 | | |
| Velocity squared | $V^2$ | 5836 | ft2/s2 | |
| 2 gravity | 2g | 64.40 | ft/s2 | |

FITTING 2: T — # T

| | | | | |
|---|---|---|---|---|
| Headloss | $h_L$ | 90.62 | ft | 4 |
| K value | K | 1.00 | | |
| Velocity squared | $V^2$ | 5836 | ft2/s2 | |
| 2 gravity | 2g | 64.40 | ft/s2 | |

PIPE 1: STRAIGHT SOLID PIPE — DARCY WEISBACH

| | | | | |
|---|---|---|---|---|
| Headloss | hf | 0.1032 | ft | |
| Pipe friction factor | f | 0.00000066 | ft | TOTAL LENGTH STRAIGHT PIPE |
| Length | L | 575 | ft | 575 ft |
| Diameter | D | 0.33 | ft | |
| Velocity squared | $V^2$ | 5836 | ft2/s2 | |
| 2 gravity | 2g | 64.40 | ft/s2 | |

**PRESSURE LOSS**

$$\Delta p = \gamma \Sigma hL$$

| | | | | |
|---|---|---|---|---|
| Pressure loss | Δp | 102.24 | lb/ft2 | |
| Pressure loss | Δp | 19.63 | " water | **1.44252 "Hg** |
| Specific Weight of air | γ | 0.075 | lb/ft3 | |
| Sum of head loss | ΣhL | 1359.45 | ft | |

# APPENDIX M

## Contaminant Mass Calculations

GROUNDWATER DATA (ug/l):

| Well ID | Date | Benzene | Ethylbenzene | Cumene | MTBE | Naphthalene | Toluene | Total Xylenes | 1,2,4-TMB | 1,3,5-TMB | Total | Average | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-3 | 4/10/2018 | 277.0 | 425 | 34.0 | 11.7 | 79.9 | 19.4 | 159.0 | 43.5 | 8.1 | 1058 | 1138 | ug/L |
| | 7/10/2018 | 670.0 | 1160 | 94.1 | 74.9 | 394.0 | 18.7 | 115.0 | 38.0 | 6.7 | 2571 | | |
| | 10/9/2018 | 98.7 | 73.4 | 15.7 | 7.0 | 14.8 | 24.3 | 166.0 | 51.1 | 9.8 | 461 | | |
| | 1/29/2019 | 80.3 | 151 | 16.4 | 6.0 | 33.7 | 13.7 | 117.0 | 35.8 | 7.6 | 462 | | |
| | | | | | | | | | | | **AVERAGE TOTAL VOC CONCENTRATION** | **1138** | **ug/L** |

SOIL DATA (mg/kg)

| | **TB-4B** | **TB-5B** | **MW-2B** | **MW-3B** | **Under Storm** | **TB-10C** | **TB-11B** | **TB-11C** | **TB-11A** | **TB-19B** |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.000 | 0.00 | 0.00 | 0.551 | 0.17 | 0 | 0.697 | 1.26 | 1.19 | 0 |
| Ethylbenzene | 5.220 | 19.0 | 11.1 | 4.01 | 0.917 | 3.61 | 4.27 | 5.17 | 0.0522 | 16.8 |
| Cumene | 2.180 | 5.25 | 2.12 | 0.819 | 0.559 | 1.06 | 2.68 | 1.15 | 0.149 | 6.19 |
| MTBE | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0 | 0 | 0 | 0 | 0 |
| Naphthalene | 14.4 | 30.3 | 20.8 | 5.27 | 1.880 | 27.9 | 12.4 | 5.39 | 0.000 | 14.0 |
| Toluene | 0.000 | 0.498 | 0.432 | 0.411 | 0.159 | 0 | 0.26 | 0.546 | 0.0588 | 0.262 |
| Total Xylenes | 12.4 | 101 | 41.8 | 8.88 | 0.934 | 6.57 | 3.52 | 12.9 | 0.674 | 42.3 |
| 1,2,4-TMB | 83.9 | 277.0 | 69.1 | 10.9 | 8.48 | 30.8 | 3.65 | 9.54 | 0.12 | 307.0 |
| 1,3,5-TMB | 0.2 | 43.8 | 13.5 | 1.57 | 0.485 | 0 | 0.000 | 1.7 | 0.0548 | 13.8 |
| TOTAL VOCs | **118.3** | **476.8** | **158.9** | **32.4** | **13.6** | **69.9** | **27.5** | **37.7** | **2.3** | **400.4** |
| Average | | **133.8** | | | | | | | | |

GROUNDWATER PLUME

| | | | |
|---|---|---|---|
| plume depth | 10 | ft | Plume dimensions determined via July 2018 isopleths |
| plume width | 55 | ft | |
| plume length | 90 | ft | |
| porosity | 0.3 | | |
| conversion factor | 28.3168 | L/ft3 | |
| MW-3 conc. | 1138 | ug/L | |
| MW-3 conc. | 1138 | ug/L | |
| mass in plume (MW-3) | 478 | g | 1.05 lb |
| mass in plume (average) | 478 | g | 1.05 lb |

SOIL PLUME

| | | | |
|---|---|---|---|
| plume depth | 6 | ft | 1.8 m |
| plume width | 45 | ft | 13.7 m |
| plume length | 60 | ft | 18.3 m |
| density | 1280 | kg/m3 | *assumed density of loam |
| TB-5B | 476.8 | mg/kg | |
| Average conc. | 133.8 | mg/kg | |
| mass in plume (TB-5B) | 279967 | g | 617.2 lb |
| mass in plume (average) | 78547 | g | 173.2 lb |