FACILITY NAME: Cook's Country Store

FACILITY ID #: 31-07856

REPORT/PLAN PREPARER: Mountain Research, LLC
(Name of Company, Michael R. Crowe, P.G.
Individual & Phone #) (814) 949-2034, Ext. 210

CORRECTIVE ACTION PROCESS REPORT/PLAN COVER SHEET

CHAPTER 245 STORAGE TANK ACT

- ☐ Site Characterization Report - Section 245.310(b)
- ☐ Site Characterization Report - Section 245.310(a)
- ☐ Site Characterization Report - Site-Specific Standard
- ■ Site Characterization Report - Statewide Health or Background Standard SUPPLEMENTAL REPORT
- ■ Remedial Action Plan - Statewide Health or Background Standard
- ☐ Remedial Action Plan - Site Specific Standard
- ☐ Remedial Action Progress Report
- ☐ Remedial Action Completion Report - Statewide Health or Background Standard
- ☐ Remedial Action Completion Report - Site-Specific Standard

(Check all that apply to the enclosed submission)

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COOKS COUNTY STORE\SCR REPORT\COOKS – SSCR RAP APX – SEPT 2016
Project No. 4547.15.01

SUPPLEMENTAL SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

COOK'S COUNTRY STORE
21042 COOKS ROAD, ROBERTSDALE,
TODD TOWNSHIP, HUNTINGDON COUNTY, PENNSYLVANIA, 16674
PADEP FACILITY ID # 31-07856
USTIF CLAIM # 2014-0163(S)

Prepared for

MS. BETTY HESS
COOK'S COUNTRY STORE
JAMES CREEK, PENNSYLVANIA

Prepared by

MOUNTAIN RESEARCH, LLC
ALTOONA, PENNSYLVANIA

SEPTEMBER 2016

Prepared by: _____ **Reviewed by:** _____

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COOKS COUNTY STORE\SCR REPORT\COOKS – SSCR RAP APX – SEPT 2016
Project No. 4547.15.01

September 2, 2016

Cynthia Stine, PG
Pennsylvania Department of Environmental Protection
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110

Re: Supplement Site Characterization Report / Remedial Action Plan
Cook's Country Store
21042 Cooks Road, Robertsdale,
Todd Township, Huntingdon County, Pennsylvania, 16674
PADEP Facility ID # 31-07856
USTIF Claim # 2014-0163(S)

Dear Ms. Stine:

Please find enclosed an original of the Supplemental Site Characterization Report / Remedial Action Plan prepared by Mountain Research, LLC for the above-referenced site, for your review and approval.

Should you have any questions relative to the enclosed report or require any additional documentation in order to complete the report review and approval process, please contact the undersigned.

Sincerely,
MOUNTAIN RESEARCH, LLC

Michael R. Crowe, P.G.
Project Manager III

MRC:ll
Enclosure

C: Betty Hess
USTIF (Electronic Copy)
Joe Ozog (Electronic Copy)

**SUPPLEMENTAL SITE CHARACTERIZATION REPORT /
REMEDIAL ACTION PLAN**

**COOK'S COUNTRY STORE
21042 COOKS ROAD, ROBERTSDALE,
TODD TOWNSHIP, HUNTINGDON COUNTY, PENNSYLVANIA, 16674
PADEP FACILITY ID # 31-07856
USTIF CLAIM # 2014-0163(S)**

PROFESSIONAL CERTIFICATION:

Professional Geologist:

Print or Type Name: **Michael R. Crowe, P.G.**

Signature:

Date: **September 2, 2016**

SUPPLEMENTAL SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

COOK'S COUNTRY STORE
21042 COOKS ROAD, ROBERTSDALE,
TODD TOWNSHIP, HUNTINGDON COUNTY, PENNSYLVANIA, 16674
PADEP FACILITY ID # 31-07856
USTIF CLAIM # 2014-0163(S)

PROFESSIONAL CERTIFICATION:

Professional Engineer:

Print or Type Name: **Marcus A. Marasco, P.E.**

Signature:

Date: **September 2, 2016**

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SUPPLEMENTAL SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

Cooks Country Store
21042 Cooks Road, Robertsdale,
Todd Township, Huntingdon County, Pennsylvania, 16674
PADEP Facility ID # 31-07856
USTIF Claim # 2014-0163(S)

1.0 EXECUTIVE SUMMARY

- One (1) 4,000-gallon tank (Tank 004), one (1) 3,000-gallon tank (Tank 005) and one (1) 2,000-gallon tank (Tank 006) and the associated product lines and dispensers, installed on the property in May 1997, were removed from the property in November 2014. All the underground storage tanks (USTs) were used for the storage of unleaded gasoline.

- Soils uncovered beneath the dispenser island were noted to be heavily impacted during UST removal. Unleaded gasoline-impacted soil beneath the dispensers was excavated three (3) feet in all directions for exploratory purposes, and impact was still evident.

- During UST closure, soil beneath the dispenser island was found to be impacted by petroleum compounds. Soil samples were collected from the tank field (two sidewalls), product piping (one), and dispenser island (two). Both dispenser island soil samples exceeded the Pennsylvania Department of Environmental Protection (PADEP) Residential Used Aquifer (RUA) soil to groundwater Medium Specific Concentrations (MSCs) for 1,3,5-trimethylbenzene (TMB), 1,2,4-TMB, benzene, and ethylbenzene, and one (1) of the dispenser island samples exceeded the PADEP RUA soil to groundwater MSC for toluene. The remaining tank field and product piping samples were below laboratory practical quantitation limits (PQLs) for all constituents.

- During UST closure, impacted groundwater was not identified. Two (2) groundwater samples were collected from the tank field, both samples were below laboratory PQLs for all constituents. However, the former tank field was determined to be situated far upgradient from the area of release.

- From August 2015 to July 2016, groundwater monitoring wells MW-1 through MW-12 and MW-1D were installed to horizontally and vertically delineate impacted groundwater at the property. Groundwater recovery well RW-1 was installed to facilitate remedial feasibility testing. Groundwater sampling was conducted on from August 2015 through August 2016.

- Overburden groundwater monitoring well analytical results indicate petroleum constituent concentrations detected above the PADEP RUA groundwater MSCs include **1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE,** and **naphthalene**.

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1.0 EXECUTIVE SUMMARY (Continued)

- The identified dissolved phase plume above the PADEP RUA groundwater MSC is located in the centered vicinity of monitoring wells MW-1 and MW-3. The 1,2,4-TMB and benzene plumes have extended to the east across Cooks Road. The 1,2,4-TMB, 1,3,5-TMB, and benzene plumes have also extended downgradient to the north to the yard in front of the on-site residential house. The 1,2,4-TMB, 1,3,5-TMB, and benzene plumes have been mapped to the west toward the yard behind the former convenience store building, sidegradient to groundwater gradient.

- On-site supply wells identified as the Inside Well and Outside Well, the off-site Cessna Well, and source area bedrock monitoring well MW-1D were all non-detect during two (2) rounds of groundwater sampling.

- A total of 50 soil borings have been advanced by Mountain Research at the property in order to fully characterize the site. A total of 63 soil samples were collected from soil borings MW-1 through MW-7; MW-8/SB-21; MW-9 through MW-12; MW-1D (Abandoned); SB-1 through SB-20; SB-22 through SB-24; SB-25/VP-3; SB-26 through SB-31; VP-1; VP-2; VP-3 (Abandoned); VP-4; and VP-5 from August 2015 through April 2016.

- Based on analytical results, the soil surrounding the former dispenser area is impacted with constituents at concentrations above the PADEP RUA soil to groundwater MSC, including: **1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes,** and **naphthalene**. MTBE was not detected in any soil boring, but the laboratory PQL was greater than the PADEP RUA soil to groundwater MSC for many of the borings. Soil impacts were identified between one (1) and eight (8) feet bgs. Unsaturated soil impacts are present between one (1) and five (5) feet bgs. Based upon a site-wide assessment of seasonal groundwater elevations as well as observations logged during drilling activities, the zone of permanent saturation at this site is five (5) feet bgs and deeper.

- The convenience store building and on-site residential house were determined to be receptors at risk of VIB from impacted soil and groundwater. Five (5) soil vapor monitoring points close to the two (2) on-site buildings were installed to evaluate VIB risk.

- Two (2) rounds of soil gas sampling were completed on July 8, 2016 and July 21, 2016. During the July 8, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for 1,2,4-TMB, 1,3,5-TMB, benzene, ethylbenzene, and total xylenes. During the July 21, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for benzene. Concentrations of all other analyzed constituents were either below their respective PADEP Residential MSC or below laboratory PQLs during each sampling event. In addition, pre-sampling integrity testing and analytical validation were performed and passed during the July 8, 2016 soil gas sampling event to ensure validity samples.

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1.0 EXECUTIVE SUMMARY (Continued)

- Ecological receptor screening was performed; no ecological receptors were identified.

- Initial quantitative fate and transport modeling was completed for an initial assessment of migrations. Qualitatively, the plume appears unstable. Downgradient benzene concentrations identified in MW-6 may continue to migrate to the east and northeast without remedial action. Downgradient 1,2,4-TMB, 1,3,5-TMB, and benzene concentrations identified in MW-7 and MW-12 may continue to migrate to the north and northeast without remedial action.

- Based on the current understanding of the site and the site owner's plan for the property, a mechanical system-based remedial strategy is proposed subsequent to limited source removal excavation. Vacuum enhanced groundwater extraction (VEGE) is the preferred active remedial strategy, based on results of a feasibility study. The goal of the remediation is to remove the highest concentrations of accessible source material and to remediate remaining soil and groundwater COC concentrations via remediation system.

- Remedial feasibility testing conducted at the site has resulted in the identification of a combined remedy of limited soil excavation and VEGE remedial treatment design using a high vacuum range to remediate soil and groundwater impacts at the site. The VEGE system will treat extracted groundwater and soil vapor from impacted areas including impacts beneath the former convenience store building, and beneath and along the opposite side of Cooks Road.

2.0 INTRODUCTION

Mountain Research has been retained by Cooks Country Store (Cooks) to complete site characterization, remediation, and ultimately site closure for the former Cooks store located in Todd Township, Huntingdon County, Pennsylvania. Based on visual and olfactory evidence of a petroleum release discovered on November 25, 2014, associated with soil beneath the gasoline dispenser island, a Pennsylvania Department of Environmental Protection (PADEP) site characterization was warranted.

Site characterization activities were conducted in accordance with Title 25, Chapter 245, Administration of Storage Tanks and Spill Prevention Program, Subchapter D, Section 309. This *Supplemental Site Characterization Report* is submitted in accordance with Section 310(c), SCR.

The following site characterization objectives were developed by Mountain Research to meet the regulations mentioned above:

- Identify the extent of impacted groundwater.
- Identify the extent of impacted soil.
- Describe the study area geology, hydrogeology, aquifer characteristics, and physical parameters such that a remediation standard and strategy for the site can be selected.

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2.0 INTRODUCTION (Continued)

- Develop a site conceptual model from which the fate and transport of constituents can be evaluated by modeling or analysis.
- Screen potential VIB risks.

The activities conducted at the subject property and used for characterization of the site include the following:

- Installation of a total of 12 overburden groundwater monitoring wells.
- Installation of one (1) bedrock groundwater monitoring well.
- Installation of one (1) groundwater recovery well.
- Collection and analysis of groundwater samples from monitoring wells.
- Local water use assessment.
- Collection and analysis of groundwater samples from two (2) on-site groundwater supply wells and one (1) off-site downgradient groundwater supply well.
- Measurement of groundwater elevations and deriving direction of groundwater flow and gradient from these measurements.
- Advancement of a total of 50 soil borings.
- Collection and analysis of 63 soil samples from soil borings.
- Collection and geotechnical analysis of soil.
- Surveying the site infrastructure, monitoring wells, and soil borings.
- Aquifer testing.
- Geophysical survey of the site.
- Development of conceptual site model and petroleum impact fate and transport assessment.
- Identification of potential preferential pathways for groundwater and / or vapor migration.
- VIB risk evaluation and site-specific soil gas investigation.
- Ecological Receptor Screening.
- Remedial Alternatives Analysis.

Soil and groundwater analytical results are compared to the PADEP RUA MSCs throughout this report. The report develops site assumptions based on these comparisons.

This **Supplemental Site Characterization Report/ Remedial Action Plan** (***SSCR/RAP***) outlines the additional characterization activities conducted at the site since the submission of the February 2012 *SCR*, provides an updated conceptual site model, describes contaminant behavior at the site, and provides recommendations regarding remedial strategies for site soil and groundwater.

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2.1 Contaminants of Concern

Groundwater samples have been analyzed for the following petroleum parameters: 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, isopropylbenzene (cumene), and naphthalene. Based on analytical results, the following parameters have been identified at detectable levels in groundwater, and are therefore identified as the Constituents of Concern (COCs) in groundwater: **1,2,4-TMB, 1,3,5-TMB**, **benzene, toluene, ethylbenzene, total xylenes, MTBE, cumene, and naphthalene**.

Soil samples have been analyzed for the following petroleum parameters; 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, cumene, and naphthalene. Based on analytical results, the following parameters have been identified at detectable levels in soil and are therefore identified as the COCs in soil: **1,2,4-TMB, 1,3,5-TMB**, **benzene, toluene, ethylbenzene, total xylenes, cumene, and naphthalene**. MTBE was not detected, but due to the high concentrations of other constituents, the soil samples were diluted to the point that the laboratory PQLs were above the PADEP RUA soil to groundwater MSCs. It is not known if MTBE concentrations are greater than the PADEP RUA soil to groundwater MSCs. Therefore, **MTBE** is also considered a COC.

2.2 Media of Concern

Soil and groundwater are identified to contain detectable concentrations of COCs and are therefore considered media of concern at the site.

2.3 Selection of Remedial Standard

The remediation standard goal for the property is the Statewide Health Standard (SHS) for soil and groundwater. SHS closure is sought due to the on-site residential home and the planned use of on-site domestic groundwater supply wells for the former store building and on-site residential house. The home and former convenience store building are currently unoccupied; however, the home is under renovation for future occupancy. The electrical service has been turned on and both on-site groundwater supply wells are functional.

3.0 SITE DESCRIPTION

The study area (Site) is within an approximate 1.61 acre plot of land that lies on the west and east side of Cooks Road (SR3019), and the site encompasses the property on the west side of SR3019. The site includes the former Cooks Country Store building and a residential house. The physical address is 21042 Cooks Road, Robertsdale, Todd Township, Huntingdon County, Pennsylvania, 16674. The Site is surrounded by residential and agricultural properties. The Site is located on the north-west portion of the USGS 7.5 Minute Series Saltillo, PA Topographic Quadrangle at an approximate Latitude 40° 12' 41.53" North and Longitude 78° 5' 18.29" West. The property has an approximate elevation of 1630 feet above mean sea level. Refer to **Figure 1** (Site Location Map), **Figure 2** (Site Map), and **Figure 3** (Aerial Site Map).

The site is situated on the west side of SR3019 immediately south of the intersection of SR3019 and Old Plank Road (SR994). The site currently includes a nonoperational, one-story, slab-on-grade convenience store and a two-story residential dwelling located directly to the north-northeast of the convenience store.

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3.0 SITE DESCRIPTION (Continued)

It should be noted that the parcel itself (approximately 1.61 acres) occupies land on the west and east sides of Cooks Road; however, the developed portion of the parcel is exclusively on the west side. The portion of the parcel situated on the east side of Cooks Road consists of a grass and gravel lot, and contains a tower for high-tension electrical lines. Refer to **Figure 4** for a wide aerial site map that illustrates surrounding properties.

3.1 Historical Operations

Historically, the property has been utilized as a gasoline fueling station with installation of the most recent tank system being conducted in 1997. The store has historically utilized USTs for the retail sale of unleaded gasoline. The USTs most recently at the property included one (1) 4,000-gallon unleaded gasoline tank (Tank 004), one (1) 3,000-gallon unleaded gasoline tank (Tank 005) and one (1) 2,000-gallon unleaded gasoline tank (Tank 006) which were installed in 1997. These tanks were located to the southwest of the convenience store. The tanks and associated dispensers and product piping were removed during closure activities in late November 2014. Prior to the installation of these USTs, three (3) other tanks had been utilized on the northeast side of the convenience store, one (1) 2,000-gallon (Tank 001), one (1) 3,000-gallon (Tank 002), and one (1) 4,000-gallon (Tank 003). All three (3) tanks were used to store unleaded gasoline. These tanks were installed prior to 1990 and were removed in 1997. An empty, unused above-ground kerosene storage tank (AST) was also present at the site. The kerosene AST was skid-mounted with secondary containment and has since been removed from the property. No additional documentation on this AST is available for review.

3.2 Current Operations

The subject property is owned by Betty Hess and contains the former Cooks Country Store building that is no longer operational. The building is currently used for storage, but may be used for other purposes in the future.

3.3 Site Features

The subject property currently contains two (2) permanent structures including a former convenience store and a residential house. The convenience store is one-story and partial slab-on-grade with the rear portion containing a crawl space. The house is a two-story home with a basement. Additional site features include: a small pavilion next to the store on the northeastern side, a storage trailer next to the pavilion, and the canopy for the former fuel dispensers. The pavilion is an open wooden structure which previously housed the kerosene AST, and the storage trailer is set upon concrete blocks. Surface areas of the property consist of gravel, grass, or paved areas. To the best of Mountain Research's knowledge and based on conversations with owners of the property, no USTs currently exist on the subject property.

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3.3 Site Features (Continued)

Land to the west of the site is occupied by a grassy field with Yellow Branch Creek beyond. Land to the north is occupied by SR994, then Yellow Branch Creek followed by residential and agricultural properties beyond. SR3019 is located to the east followed by the eastern portion of the site parcel (vacant grass and gravel lot). An abandoned portion of the East Broad Top Railroad line and Great Trough Creek are located to the east of the site property. Land to the south includes agricultural fields and residential properties. Refer to **Figure 2** for a map showing property boundaries.

3.3.1 Utilities

The following information regarding locations of underground utilities at the property has been obtained through site visits and a geophysical survey performed by THG Geophysics, Ltd. (THG):

- Water for the site is provided by two (2) separate on-lot private supply wells. The water supply well for the convenience store is located inside the building and is accessible through an access panel into a crawl space beneath the building. The water supply well for the house located behind the house (northwest). Mountain Research excavated the well so that the groundwater samples could be collected; once excavated, the owner upgraded the piping and repaired a jet pump located in the basement. The electrical service has been turned on and both supply wells are operational.

- A septic tank exists between the house and convenience store. Underground sewer service piping connects the septic tank to the house, but the connection to the convenience store is currently unknown. On-lot sewage may be present for the convenience store or an unidentified line may connect to the identified septic tank. The discharge pipe from the septic tank runs to east-southeast beneath the roadway to a leach area on the eastern portion of the parcel across SR3019.

- Electric service enters the property at the utility pole situated in the northeast corner of the parcel. Overhead electric enters the station building near the northeast corner.

- The house is also connected to an outdoor wood boiler behind the house. THG identified hot water lines connected to both the house and convenience store building. The hot water lines enter both the convenience store and the house on the northeastern facing walls.

- Municipal water, sewage, and natural gas are not available near the site.

Refer to **Figure 2** for approximate utility locations. A copy of THG's Geophysical Report is available in the February 2016 *SCR*.

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4.0 RELEASE HISTORY

4.1 Historical Tank Closure (May 1997)

On January 24, 1997, upgrade activities were initiated within the UST field on the northeast side of the convenience store at the site. During the upgrade, unleaded gasoline-impacted soil and groundwater were encountered. The PADEP was notified and Earthtech, Inc. was retained as an environmental consultant. Earthtech, Inc. arrived at the site on February 24, 1997 and through test pit excavations and sampling, determined that contamination was isolated to the tank field. The source of impact is believed to have originated from an elbow in the product piping of the 3,000-gallon tank (Tank 002) and, in general, the piping was reported to be in very bad condition.

The property owner decided to install new tanks (004, 005, and 006) on the southwest side of the building in a virgin excavation. After installation of new tanks, the old tanks were removed on May 29, 1997. Approximately 100 tons of impacted soil was removed for disposal and three (3) four-inch observation wells were placed into the backfilled area for future sampling.

A Closure Report for Country Crossroads was prepared by Earthtech, Inc. in August of 1997. The report documents previous site activities, including soil and groundwater sampling collection.

Two (2) dispenser soil samples (1 and 2) were reportedly collected on May 20, 1997 and analyzed on May 23, 1997 for unleaded gasoline parameters. The Dispenser 1 sample was found to contain 2,000 µg/kg of benzene; the Dispenser 2 sample was found to contain 3,090 µg/kg of benzene.

Five (5) confirmatory soil samples (A through E) were reportedly collected from the UST excavations on May 29, 1997. These samples were analyzed on June 4, 1997 by Norac Laboratory, Inc. of Johnstown, PA for unleaded and leaded gasoline parameters via EPA Methods 8260A and 8270B. Petroleum constituent concentrations were not detected above laboratory PQLs. Concentrations of lead were identified between 1.4 mg/kg and 27.0 mg/kg.

Three (3) groundwater samples (OW-1, 2, and 3) were reportedly collected on July 24, 1997 and analyzed on July 28, 1997 for unleaded gasoline parameters. Toluene was identified within OW-1 at a concentration of 5.7 µg/L. Benzene was identified within OW-3 at a concentration of 3.7 µg/L. Remaining parameters were not identified above the laboratory PQLs.

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4.2 Current Tank Closure (November 2014)

On November 25, 2014, UST closure activities were initiated for Tanks 004, 005, and 006 and associated product lines and dispensers. One (1) 4,000-gallon unleaded gasoline tank (Tank 004), one (1) 3,000-gallon unleaded gasoline tank (Tank 005) and one (1) 2,000-gallon unleaded gasoline tank (Tank 006) and the associated product lines and dispensers, installed on the property in May 1997, were removed from the property. The owner, Betty Hess, performed the tank removal activities with Pat McVicker of Petroleum Maintenance Service. Soils uncovered beneath the dispenser island were noted to be heavily impacted. Unleaded gasoline-impacted soil beneath the dispensers was excavated three (3) feet in all directions for exploratory purposes, and impact was still evident.

During UST closure, soil samples were collected from the tank field (two sidewalls), product piping (one), and dispenser island (two). Both dispenser island soil samples exceeded the PADEP RUA soil to groundwater MSCs for 1,3,5-TMB, 1,2,4-TMB, benzene, and ethylbenzene, and one (1) of the dispenser island samples exceeded the PADEP RUA soil to groundwater MSC for toluene. The remaining tank field and product piping samples were non-detect for all constituents. Two (2) groundwater samples were collected from the tank field, both samples were non-detect for all constituents. The excavation area was noted to have filled with water.

UST excavation soil and excavation water sample laboratory analytical data reports and a copy of the November 2014 PADEP Notice of Contamination (NOC) were included in the February 2016 *SCR*.

4.3 Type & Volume Of Regulated Substance Removed

One (1) 4,000-gallon unleaded gasoline tank (Tank 004), one (1) 3,000-gallon unleaded gasoline tank (Tank 005) and one (1) 2,000-gallon unleaded gasoline tank (Tank 006) and the associated product lines and dispensers were removed.

4.4 Fire & Explosion Hazards

No fire and explosion hazards exist at the site.

4.5 Relocation of Affected Residents

Based on the nature of the impacts, relocation of affected residents was not deemed necessary.

4.6 Recovery of Free Product

Free product was not encountered during UST closure or site characterization activities.

4.7 Excavation of Impacted Soil

Unleaded gasoline-impacted soil beneath the dispensers was excavated three (3) feet in all directions for exploratory purposes; however, the impacted soil was not removed from the hole.

4.8 Interim Remedial Action

Interim remedial actions have not yet been conducted at the site.

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5.0 SOURCE OF PETROLEUM IMPACTS

Based on observation and confirmation of impacts beneath the dispenser island during UST system closure, the source of release is believed to be caused from faulty unleaded gasoline dispensing equipment and/or piping/connections immediately beneath the dispensing equipment. It should be noted that dispenser pans or dispenser sumps were not installed at this facility.

5.1 Characteristics of Regulated Substance

Site history, and soil and groundwater analytical data indicate that the regulated substances released at the facility consisted of unleaded gasoline. Analytical results from historical and recent soil samples indicate that 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, and naphthalene are the only COCs that have been detected in soil at concentrations exceeding PADEP RUA soil to groundwater MSCs. Analytical results from historical and recent groundwater samples indicate that 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene have been identified in groundwater at concentrations exceeding PADEP RUA groundwater MSCs. The characteristics of the aforementioned constituents are summarized in **Appendix A** (Characteristics of Regulated Substances).

6.0 WATER SUPPLIES

The site is currently unoccupied; however, future occupation of the on-site residential dwelling is planned. Water on the subject property is obtained via the use of two (2) potable supply wells, both of which are currently operational. The supply well for the convenience store building is located inside the convenience store building. The Inside well is situated within the interpolated impacted groundwater plume. Construction information for the "Inside" is unknown. The Outside well for the on-site house is located behind the house to the northwest, and upgradient to sidegradient of soil and groundwater impacts. The Outside Well is approximately 50 feet deep; the length of steel casing is unknown. Based on two (2) rounds of groundwater sampling, neither of the on-site supply wells have been impacted by dissolved phase plume; therefore, a down-hole study has not been completed to determine exact construction details. The **Figure 2** illustrates the location of each supply well.

An Environmental Data Resources (EDR) report was reviewed to locate potential water supplies. Fourteen (14) potential wells were identified to be located within ½ of a mile of the property. When plotted, two (2) wells were determined to contain duplicates in the listings; reducing the total to 12 wells. The three (3) nearest wells listed in the EDR report that could be accurately mapped via coordinates are identified as A1, B4, and B6. Well A1 is located approximately 450 feet to the north (upgradient and across Yellow Branch [creek]). Well B4 is located approximately 985 feet to the southwest (sidegradient). Well B6 is located approximately 1,070 feet to the southwest (sidegradient). No wells were plotted within ½ of a mile of the property in the presumed downgradient direction. Wells A2, B3, B5, D9, and D14 were determined to be located approximately 6.3 miles to the south-southeast (downgradient) when plotted via coordinates. The on-site supply well was not identified in the EDR Report. Refer to the February 2016 *SCR* for a copy of the regulatory database report.

6.0 WATER SUPPLIES (Continued)

An updated (August 2016) review of the Pennsylvania Topographic and Geological Survey's, Pennsylvania Groundwater Information System (PaGWIS) was also completed to locate potential water supplies within ½ mile of the subject property. Review of the PaGWIS database identified seven (7) wells. All seven (7) wells were installed for domestic withdrawal. Total depths ranged from 88 to 123 feet deep. All seven (7) of the wells were duplicates of wells identified in the EDR report. Refer to the February 2016 *SCR* for a copy of the PaGWIS database listings. A copy of the updated PaGWIS database search is included as **Appendix B**.

Mountain Research personnel performed reconnaissance on the downgradient property across Old Plank Road. The property is owned by Mr. David Cessna and it used as a commercial tree/shrub nursery for Mr. Cessna's landscaping business. One (1) groundwater supply well was identified on the property; the well pressure tank is located outside, sitting on the ground and is tied directly into a sprinkler system that is used only to water trees and shrubs. Mr. Cessna indicated that the well is approximately 150 feet deep with at least 50 feet of steel casing. Mr. Cessna granted Mountain Research permission to sample the well (**Section 9.2.1**).

Neither of the on-site supply wells or the Cessna Well were identified in the PaGWIS database or the EDR report. Based on the information obtained, it appears that regulatory databases are incomplete in the vicinity of the site.

6.1 Restore or Replacement of Affected Supplies

Replacement and restoration of water supplies was not deemed necessary and were not performed at this time. The convenience store building and the nearby house are not currently in use, and have not been impacted by the petroleum release.

6.2 Potentially Affected Supplies

During additional site characterization activities, Mountain Research collected two (2) rounds of groundwater sampled from the Inside Well and Outside Well. Both on-site supply wells were non-detect for all COC's during two (2) rounds of sampling (**Section 9.2.1**). It is possible, however, it is not currently known whether routine pumping on the on-site supply wells could cause a vertical migration condition. Continued monitoring of the on-site and off-site supply wells will be completed during routine future groundwater sampling events.

Due to a natural shallow groundwater divide created by Yellow Branch and Great Trough Creek, a petroleum release emanating from the site is unlikely to affect the PaGWIS identified wells located on the opposite side of Yellow Branch. It is possible that the downgradient Cessna Well could potentially be affected by future plume migration; however, it is unlikely that supply wells located on other neighboring properties could be affected by the release due to the direction of the groundwater gradient. The Cessna property contains a slab on grade storage shed and operates seasonally as a small tree and shrub nursery. Mountain Research collected groundwater samples from the Cessna Well during two (2) events. The Cessna Well was non-detect for all COC's during the two (2) rounds of sampling. Based upon a minimum of 50 feet of steel casing on the Cessna Well, it is unlikely that groundwater impacts will impact the aquifer from which the Cessna Well draws water.

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7.0 ADDITIONAL SITE CHARACTERIZATION

Cooks Country Store retained the services of Mountain Research in 2015 to conduct a site characterization on the subject property. Initial site characterization activities were conducted from January 2015 through February 2016. Mountain Research submitted a *SCR* in February 2016. In order to further delineate the extent and magnitude of impacts at the site, the following supplemental site characterization activities were conducted from February 2016 to present:

- Advancement of 19 additional soil borings.
- Collection and analysis of soil samples from soil borings.
- Installation of four (4) additional overburden monitoring wells.
- Installation of one (1) bedrock aquifer monitoring well.
- Measurement of groundwater elevations and deriving direction of groundwater gradients from these measurements.
- Collection and analysis of groundwater samples from monitoring wells.
- Collection and analysis of groundwater samples from two (2) on-site supply wells.
- Installation, sampling, and analysis of five (5) soil vapor points.
- Tie-in level surveying of additional monitoring points.
- Off-site downgradient water use assessment and sampling of the off-site Cessna Well.
- Additional aquifer testing.
- Develop an updated conceptual site model.
- Assessment of petroleum fate and transport analysis.
- Remedial feasibility study.

Refer to **Figure 2** and **Figure 5** (Soil Boring Location Map) for maps illustrating the soil boring and monitoring well locations. Field methods for drilling, soil logging description, well installation, soil screening, and groundwater sample collection are described in **Appendix C** (Field Methods).

7.1 Characterization Plans

The *Health and Safety Plan* for the site characterization and *Quality Assurance / Quality Control Plan* are available to the PADEP upon request.

7.2 Additional Soil Borings

A total of 19 additional soil borings have been advanced by Mountain Research at the property in order to fully characterize the site. Soil was visually inspected and scanned with a photo-ionization detector (PID) using the headspace method. One (1) soil sample was collected from each soil boring where the highest PID reading is encountered. If a specified interval of petroleum impacted soils was identified, a second sample was collected immediately as deemed necessary to vertically delineate the overall thickness of petroleum impacted soils. If no elevated organic vapor levels are measured along the length of a boring and no staining and / or odors are evident, the sample was obtained from the depth interval immediately above the soil/groundwater interface. The following subsections summarize additional soil boring advancement activities.

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7.2.1 April 2016 Soil Boring Installation

From April 14, 2016 through April 20, 2016, Mountain Research advanced monitoring well soil borings MW-1D, RW-1, and MW-9 through MW-12; soil borings MW-1D (Abandoned), VP-3 (Abandoned), and SB-23 through SB-31; and soil vapor monitoring points VP-1 through VP-5. Note: the first attempt at VP-3 was abandoned due to shallow saturation, but resulted in soil boring VP-3 (Abandoned) because a soil sample was collected; the final VP-3 location was installed at the location of SB-25; therefore, for tabulation and mapping purposes, the sample identification was combined as SB-25/VP-3. Also note: the first attempt at installation of MW-1D was unsuccessful and was abandoned; therefore, the location changed to a soil boring identified as MW-1D (Abandoned). Additional soil samples were collected from the intervals from one (1) to six (6) feet below ground surface (bgs). Monitoring well borings were advanced to refusal using hollow stem auger drilling methods. Standalone soil borings were advanced using direct push drilling methods to refusal. Soil encountered during drilling activities consisted of sandy clay, clayey sand, sandstone cobbles, weathered sandstone, and fill material. A total of 20 soil samples were collected from the 19 soil borings described above.

Refer to **Figure 5** for soil boring and monitoring well locations; geologic logs and well construction diagrams are included for reference in **Appendix D** (Geologic Logs).

7.3 Additional Well Installation

To further delineate groundwater impacts and to facilitate remedial feasibility testing, a total of four (4) additional overburden monitoring wells, one (1) bedrock monitoring well, and one (1) groundwater recovery well were installed. The following subsections summarize well installation activities conducted during additional site characterization.

7.3.1 Overburden Monitoring Wells MW-9 through MW-12

Based on the analytical results from groundwater samples obtained from monitoring wells MW-1 through MW-8, from April 14 through 21, 2016, additional monitoring wells MW-9 through MW-12 were installed. In order to further delineate the groundwater plume, MW-9 was positioned upgradient from the source area, MW-10 and MW-11 were positioned sidegradient, and MW-12 was positioned downgradient. The two-inch diameter monitoring wells were installed using hollow stem auger drilling methods to depths ranging between six (6) and 14 feet bgs.

7.3.2 Bedrock Monitoring Well MW-1D

In order to provide vertical delineation, on July 19, 2016, monitoring well MW-1D was installed with a screened interval isolated to the first encountered shallow bedrock aquifer beneath the overburden. MW-1D was situated very close to MW-1, the most impacted overburden monitoring well at the site. The two-inch diameter monitoring well was installed using a combination of hollow stem auger and air rotary drilling methods to a total depth of 28 feet bgs. Competent red shale bedrock was encountered at 20 feet bgs.

7.3.3 Recovery Well RW-1

To facilitate remedial feasibility testing, on March 16, 2016, recovery well RW-1 was installed approximately eight (8) feet to the south of MW-1, the most impacted overburden monitoring well at the site. The four (4) inch diameter recovery well was installed using hollow stem auger methods to a total depth of nine (9) feet bgs.

The locations of the monitoring wells are illustrated on **Figure 2**. **Table 1** (Well Construction Summary) summarizes the installation dates and monitoring well construction details. Well construction and geologic logs are contained in **Appendix D**.

7.4 Aquifer Testing

7.4.1 Aquifer Slug Testing

On December 10, 2015, falling head and rising head slug testing was performed on overburden monitoring wells MW-1, MW-3, MW-5, and MW-7 to determine specific aquifer characteristics of the groundwater within the overburden. The data gathered from each slug test was programmed into AQTESOLV for Windows (Version 3.5), along with individual monitoring well information to determine aquifer characteristics by the Bouwer and Rice Method (Bouwer and Rice, 1976). Refer to the February 2016 *SCR* for details regarding the slug tests.

The Bouwer and Rice Method calculations yielded a geometric mean hydraulic conductivity value of 1.977 ft / day for the unconfined overburden aquifer; however, observations during subsequent pump testing refute the previously calculated hydraulic conductivity value (see **Section 7.4.2**).

7.4.2 Aquifer Pump Test Observations and Conclusions

On June 13-14, 2016, Mountain Research attempted to perform a step test followed by a 12-hour constant rate pump test. A Grundfos variable frequency electric pump was used. And two 150-pound carbon vessels in series were used to treat recovered groundwater prior to discharge via PADEP Temporary Discharge Permit.

On June 13, 2016, the step test commenced at recovery well RW-1. Step 1 pumped at 3.75 gallons per minute (gpm) for 30 minutes resulting in 1.01 feet of drawdown with stabilization; Step 2 pumped at 4.2 gpm for 35 minutes resulting in a total of 2.94 feet of drawdown with relative stabilization; Step 3 increased pumping to 4.75 gpm for 15 minutes resulting in a total of 2.96 feet of drawdown. The test was stopped during Step 3 due to excessive turbidity/silt accumulation in the well and around the pump causing a potential to clog carbon units being used for treatment. The solution for the following day was to discharge directly into a large poly storage tank for sediment settling prior to carbon treatment.

7.4.2 Aquifer Pump Test Observations and Conclusions (Continued)

On June 14, 2016, due to the sedimentation issue the previous day, the step test was rerun to confirm an ideal flow rate for a constant rate pumping test. When running Step 1 at 3.75 gpm, the pump dried RW-1 within three (3) minutes. Following removal of the Grundfos pump and sufficient recharge, the test was attempted again at a pumping rate of 2.5 gpm with a small groundwater sampling pump; RW-1 went dry within 1 minute. Recharge was then monitored for 50 minutes. Following recharge, the test was tried again at a pumping rate metered back to one (1) gpm; RW-1 was again dry within 3.5 minutes. The pump testing was then aborted.

Based on observations during the pumping test, Mountain Research believes that communication was occurring between RW-1 and areas of fill material with a much higher hydraulic conductivity. Know and potential areas of fill include a former UST basin, former product line trenches, canopy footer excavations, subbase beneath paved areas, and areas that may have been excavated and backfilled with like material during historical property development. Static water level (SWL) readings at RW-1 and MW-1 prior to the pump test were less than two (2) feet below top of casing, shallow enough to intersect many areas of fill. The high pumping rate achieved at the beginning of the step test represents dewatering of fill material; the subsequent rapid drying of RW-1 even down to a pumping rate of one (1) gpm occurred when the areas of fill material were dewatered. Due to these important observations, at least the initial portion of SWL recharge in RW-1 immediately after dewatering should be representative of true aquifer response; therefore, an analysis was performed on the recharge data.

The 50 minutes of post-dewatering recovery data was programmed into AQTESOLV for Windows (Version 3.5), along with recovery well information to determine more representative aquifer characteristics for groundwater within the overburden aquifer. The Bouwer and Rice Method (Bouwer and Rice, 1976) was used to analyze recharge data for an unconfined aquifer, similar to single well response during a rising head slug test. Refer to **Appendix E** for a copy of the displacement versus time graph for RW-1 recharge.

The Bouwer and Rice Method calculations yielded a hydraulic conductivity value of **0.1552 ft/day** for the unconfined overburden aquifer based on post-dewatering recovery data from RW-1. Using the values of hydraulic conductivity (K) and an average aquifer thickness (b) of 11.45 feet, the calculated average transmissivity (T = Kb) is **1.74 ft^2/day**.

7.5 Site Survey

Additional soil borings and monitoring wells were surveyed by Mountain Research personnel and tied into the existing base map.

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7.6 Characterization and Disposal of Waste

Soil cutting generated during the advancement of soil borings and monitoring well installation activities was staged in 55-gallon steel drums on the subject property prior to being disposed of by J & F Holdings, Inc.; a copy of the waste documentation is pending from J & F Holdings, Inc. Additional drums of cutting were generated during installation of MW-1D in July 2016. Disposal pick-up is pending. All waste disposal documentation will be provided to PADEP subsequent to submission of this *SSCR-RAP*.

8.0 SITE GEOLOGY

The site is situated within the Appalachian Mountain Section, Ridge and Valley Physiographic Province of Pennsylvania.

8.1 Local Soils

Based on information provided by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), native soils at the property consist of the Philo and Basher silt loams (Ph) and Philo Basher silt loams, high bottom (Po). Ph and Po soils consist of coarse-loamy alluvium derived from sandstone and siltstone. Typical of flood plains, Ph and Po soils are moderately well drained with moderately high to high permeability, and are classified as prime farmland. Refer to the February 2016 *SCR* for a copy of the soil survey map.

Based on Geotechnical results, the soil on the subject property is classified as silty clayey sand. Soil encountered during drilling activities consisted of mostly silty, sandy, or gravelly clay, with some sandy silt; gravelly, clayey, silty, or course sand; gravel or sandstone cobbles. Saturation in the overburden was noted from 0.5 feet bgs to 15 feet bgs.

8.2 Bedrock Geology

Based on published geologic data, underlying bedrock at the site is classified as the Mississippian Age Mauch Chunk Formation. The Mauch Chunk Formation consists of shale, claystone, sandstone, and siltstone with a maximum thickness of 3,000 feet. Bedding is moderately well bedded, thin, and flaggy with cross-bedding, ripple marks, and rain marks common. Joints are abundant, moderately well formed, and regularly spaced; however, spacing distance if dependent upon rock type. Most joints are open and vertical. Porosity is generally low to moderate in sandstone and siltstone. Joints provide secondary porosity in shale, sandstone, and siltstone. Permeability is also moderate to low. Bedrock outcropping was not identified in the general vicinity of the property, therefore strike and dip determinations were not able to be recorded during site reconnaissance activities. Groundwater supply is extensively developed in the Mauch Chunk due to good yield; iron is often high, but water quality is generally good. Refer to **Figure 6** for a copy of the geologic map which depicts the subject property.

Based on observations made during installation of bedrock well MW-1D, bedrock beneath the site is red shale and was encountered at a depth of 20 feet bgs.

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8.2 Bedrock Geology (Continued)

Updated **Figure 7** (Cross Section Location Map), **Figure 8** (Cross Section A-A'), **Figure 9** (Cross Section B-B'), and **Figure 10** (Cross Section C-C') are included to illustrate subject property. Refer to **Appendix D** for geologic logs.

8.3 Hydrogeology

The hydraulic gradient at the site has been observed ranging from east to north. Based on an assessment of the topographic features of the local vicinity, Yellow Branch Creek is located approximately 150 feet west of the site at the nearest. Yellow Branch Creek is a tributary to Great Trough Creek. Yellow Branch Creek flows northerly behind the property from southwest of the property to north of the property. It then flows to the east to southeast, connecting with Great Trough Creek approximately 800 feet to the southeast of the site. Great Trough Creek flows east from the Yellow Branch tributary for several hundred feet before turning north. Groundwater flow direction at the site appears to be to the east toward the Great Trough Creek to north toward Yellow Branch. No storm sewer utilities were found at or near the property. Refer to **Figure 1** site location map for an identification of the nearby surface water bodies.

According to data obtained from groundwater sampling events conducted from August 2015 to August 2016, SWL measurements range from 0.89 feet below top of casing (btoc) at MW-6 and 3.69 feet btoc at MW-11. Calculated from the groundwater monitoring events in February, May, June, and August 2016, the average groundwater gradient between monitoring wells is 0.011 feet/foot (ft/ft).

Static groundwater level measurements and groundwater elevations are summarized in **Table 2** (Groundwater Elevation Summary). Groundwater contour maps were constructed using the survey data and the SWL measured during four (4) monitoring events in February, May, June, and August 2016. Groundwater elevation contour maps are included as **Figures 11** through **14**.

9.0 ANALYTICAL RESULTS

Soil and groundwater samples were analyzed using U.S. Environmental Protection Agency (USEPA) approved methods for the regulated substances related to the release of unleaded gasoline.

9.1 Soil Borings

A total of 50 soil borings were advanced at the property since August 2015. The following subsections summarize soil sample analytical results.

9.1.1 Soil Boring Analytical Results

A total of 63 soil samples were collected from soil borings MW-1 through MW-7; MW-8/SB-21; MW-9 through MW-12; MW-1D (Abandoned); SB-1 through SB-20; SB-22 through SB-24; SB-25/VP-3; SB-26 through SB-31; VP-1; VP-2; VP-3 (Abandoned); VP-4; and VP-5 from August 2015 through April 2016. Soil samples were analyzed for 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, cumene, and naphthalene via EPA method 8260B. Analytical results identified the following constituents at concentrations above the PADEP RUA soil to groundwater MSCs for unsaturated soil: 1,2,4-TMB, 1,3,5-TMB benzene, toluene, ethylbenzene, total xylenes, and naphthalene. Unsaturated soil impacts are present between one (1) and five (5) feet bgs. Based upon a site-wide assessment of seasonal groundwater elevations as well as observations logged during drilling activities, the zone of permanent saturation at this site is five (5) feet bgs and deeper. Saturated soil impacts were identified between five (5) and eight (8) feet bgs; however, PADEP interprets saturated soil impacts as a groundwater issue.

The following table summarizes the constituents identified in soil at concentrations above each constituent's respective PADEP RUA soil to groundwater MSC.

COCs Exceeding PADEP RUA MSC	Soil Borings Containing Unsaturated COC Exceedances of PADEP RUA MSCs
1,2,4-TMB	MW-1, MW-1D (Abandoned), MW-2, MW-3, MW-4, SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, SB-7, SB-8, SB-9, SB-10, SB-11, SB-12, SB-13, SB-14, SB-27, SB-29, VP-1, VP-2, VP-3 (Abandoned)
1,3,5-TMB	MW-1D (Abandoned), MW-3, SB-2, SB-3, SB-5, SB-6, SB-11, VP-3 (Abandoned)
Benzene	MW-1, MW-1D (Abandoned), MW-2, MW-3, SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, SB-8, SB-11, SB-12, SB-14, SB-26, SB-27, VP-1
Toluene	MW-1, MW-1D (Abandoned), MW-3, SB-1, SB-2, SB-3, SB-5, SB-6, SB-11, SB-12
Ethylbenzene	MW-1, MW-1D (Abandoned), MW-3, SB-1, SB-2, SB-3, SB-5, SB-6, SB-11, SB-12, SB-14
Total Xylenes	MW-1D (Abandoned), MW-3, SB-1, SB-2, SB-5, SB-6
Naphthalene	MW-1D (Abandoned), MW-2, MW-3, SB-1, SB-3, SB-5, SB-6, SB-11, VP-1, VP-3 (Abandoned)

9.1.1 Soil Boring Analytical Results (Continued)

Concentrations of remaining analyzed constituents were either below laboratory PQLs, below unsaturated PADEP RUA MSCs, or only in exceedance of the saturated PADEP RUA MSCs. It should be noted that the laboratory PQLs are above the PADEP RUA soil to groundwater MSCs for benzene for samples taken from SB-7, SB-9, SB-10, SB-28, SB-30, VP-2, and VP-3 (Abandoned), and for MTBE for samples taken from MW-1 to MW-3, MW-1D (Abandoned) SB-1 to SB-7, SB-9 to SB-12, SB-14, SB-28, SB-30, and VP-1 through VP-3 (Abandoned). Refer to **Appendix F** for the April 2016 soil sample laboratory analytical data reports, which are summarized in **Table 3**. The location of soil impacts are depicted on **Figure 15**. Refer to **Appendix G** for isoconcentration maps of COC concentrations above PADEP RUA soil to groundwater MSCs in soil.

9.2 Groundwater

9.2.1 Monitoring Well Analytical Results

Groundwater samples were collected from all monitoring wells in May 10, 2016. Newly installed monitoring wells MW-9 through MW-12 were sampled on August 3, 2016. In addition, the Inside Well and Outside Well were sampled on June 14, 2016 and August 3, 2016, and the off-site Cessna Well was sampled on June 29, 2016 and July 21, 2016. Groundwater samples were analyzed for 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, cumene, and naphthalene via EPA method 8260B. The following table summarizes the constituents identified in groundwater during all groundwater sampling events at concentrations above each constituent's respective PADEP RUA groundwater MSC.

COCs Exceeding PADEP RUA MSC	Wells Containing COC Exceedance of PADEP RUA MSC
1,2,4-TMB	MW-1, MW-2, MW-3, MW-4, MW-5, MW-7, MW-10, MW-12
1,3,5-TMB	MW-1, MW-2, MW-3, MW-4, MW-10, MW-12
Benzene	MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-10
Toluene	MW-1, MW-3
Ethylbenzene	MW-1
Total Xylenes	MW-1
MTBE	MW-1, MW-3
Naphthalene	MW-1, MW-2, MW-3, MW-4

All other constituents / wells were below laboratory PQLs or detected at concentrations below PADEP RUA groundwater MSCs. Refer to **Appendix F** (Laboratory Analytical Data Reports) for 2016 laboratory analytical data reports for groundwater. Groundwater analytical results obtained to the present are summarized in **Table 4** (Groundwater Analytical Summary).

9.2.1 Monitoring Well Analytical Results (Continued)

Note that on-site supply wells identified as the Inside Well and Outside Well, the off-site Cessna Well, and source area bedrock monitoring well MW-1D were all non-detect during two (2) rounds of sampling.

Based on the groundwater sampling events conducted in 2015, the highest concentrations of constituents identified above PADEP RUA groundwater MSCs have been detected in monitoring wells MW-1 through MW-3, which are situated in the area immediately surrounding the former dispenser area and the adsorbed phase source area (**Figure 14**). Refer to **Appendix H** for groundwater isoconcentration maps of COC concentrations above PADEP RUA groundwater MSCs.

10.0 VAPOR INTRUSION INTO BUILDINGS

The Land Recycling Program Technical Guidance Manual-Vapor Intrusion into Buildings (VIB) from Groundwater and Soil under the Act 2 Statewide Health Standard (January, 2004) provides additional attainment screening requirements to prevent the occurrence of unacceptable risks resulting from intrusion of vapors from soil and / or groundwater into buildings. The guidance identifies chemicals of potential indoor air concern (COPIACs) and determines if additional characterization or remedial actions are required to mitigate vapor impacts to sensitive receptors.

Certain compounds typically associated with a release of unleaded gasoline are identified as COPIACs, and may represent a concern even at concentrations below RUA soil to groundwater pathway MSCs or RUA groundwater MSCs. The guidance provides for utilizing the Indoor Air Quality Decision Matrix for statewide health standard (SHS) flow charts to determine if additional evaluation is necessary.

Potential vapor exposure (inhalation) pathways relating to soil and groundwater impacts were evaluated. Results of the evaluation are presented in the following subsections.

10.1 Soil and Groundwater Analytical Screening for VIB

Based on the criteria outlined in the guidance document, when the following conditions exist, contamination is *not* considered to pose a VIB risk:

- Contamination is at concentrations less than PADEP PQL.
- Contamination at or below the media specific concentrations (MSC) is separated vertically by a minimum of five (5) feet of soil-like material; sand, gravel, and bedrock are *not* considered soil-like material.
- Contamination exceeding MSC is greater than 100 feet laterally from any building receptors.
- Any preferential pathways are greater than 30 feet laterally from contamination exceeding MSCs.

10.1 Soil and Groundwater Analytical Screening for VIB (Continued)

The VIB guidance document generally defines an exposure pathway as the course a regulated substance(s) takes from the source area(s) to a species of concern. Potential preferential pathways listed in the document include "shallow rock or vertically fractured soil, or manmade (e.g. buried utilities) features that create a sufficiently direct pathway from a source to a receptor". Pathways must pass through or within 30 feet of a source to constitute a preferred pathway.

10.2 Site Preferential Pathways

Overburden encountered on-site consists mainly of sand, silt, clay, gravel, and sandstone cobbles. The clay is considered to be a soil-like material according to the VIB guidance document and, hence, the clay-containing soils would not be a preferential pathway for soil vapor. However, areas of gravel fill used to backfill excavated areas on the property would be considered a preferential pathway for soil vapor migration.

Underground utilities consist of on-lot septic, on-site water, and hot water heating lines. Site utilities such as the septic system piping are presumed to be located within 30 feet of soil and / or groundwater impacted with COCs at concentrations that are above PADEP RUA MSCs. Due to the close proximity of underground utilities to the soil and groundwater impacts, underground utilities are considered potential preferential pathways for vapor migration from unsaturated soil and overburden groundwater. Refer to **Figure 2** for approximate underground utility locations.

Based on site characterization data, 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, and naphthalene are identified at concentrations above PADEP RUA soil to groundwater MSCs in soil, and 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene are currently above PADEP RUA MSCs for groundwater. The convenience store building and the nearby residence are all located within 100 lateral feet of soil and groundwater impacts above PADEP RUA MSCs. Based on the location of the soil and groundwater impacts with regard to the buildings at the site, each building is considered a potential receptor in regards to VIB.

No other buildings are found to be near the identified impacts causing VIB concerns.

10.3 Soil Vapor Inhalation

The inhalation of soil vapors potentially generated from existing adsorbed phase soil concentrations and dissolved phase groundwater at the site was evaluated. Due to the exceedances of the PADEP RUA MSCs in soil and groundwater within 100 feet of building receptors and 30 feet of utilities, the soil and groundwater impacts pose VIB risk that requires further evaluation. Vapor monitoring points were installed at the site to determine if the concentrations of COCs in the soil vapor exceed PADEP Residential Soil Vapor MSCs.

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10.4 Soil Vapor Monitoring Point Installation

To assess the potential for vapor intrusion emanating from petroleum impacts partitioning from site soil and site groundwater, five (5) soil vapor monitoring points (VP-1 through VP-5) were installed by Mountain Research pursuant to the requirements, guidance, and decision matrices in the *Land Recycling Program Technical Guidance Manual - Section IV.A.4, Vapor Intrusion into Buildings from Soil and Groundwater.* To determine impacts to the two (2) buildings (convenience store and nearby house), soil vapor monitoring points were installed as close as possible to the buildings. Soil vapor monitoring points VP-1 and VP-2 were installed in front of the convenience store building near the eastern wall, and soil vapor monitoring point VP-3 was installed along the northeastern wall of the building. Soil vapor monitoring points VP-4 and VP-5 were installed along the southwestern side of the house. Refer to **Figure 2** for soil vapor monitoring point locations.

Soft-digging/air knife methods were used to advance a small diameter boring until indications of saturation were observed, each soil vapor monitoring point was then set immediately above saturation. Soil vapor monitoring points were set at depths ranging from two (2) to five (5) feet bgs. Six (6) inch long by 0.5-inch diameter, cylindrical, stainless steel sampling screens (Geoprobe® Model AT86) were attached to medium-density polyethylene (MDPE) tubing and placed at the specified sampling depth. Sand was placed around the implant and to six (6) inches above the implant. Granular bentonite pellets were used to complete the backfill of the borehole to within one (1) foot of the ground surface. The bentonite was incrementally hydrated throughout the process to provide an adequate seal and the remaining borehole was filled with concrete to grade to complete the seal. The borehole was ultimately capped with a steel five (5) inch diameter manway to provide access to the tubing.

Refer to **Figure 2** for the location of the soil vapor monitoring points. Refer to **Appendix C** for soil vapor monitoring point installation methods. Soil vapor monitoring point construction diagrams are included in **Appendix D**.

10.5 Soil Vapor Sampling Methodology

Two (2) complete rounds of soil vapor sampling were conducted by Mountain Research on July 8, 2016 and July 21, 2016. Weather conditions during the July 8, 2016 sampling event were cloudy with rain and a high of 84° Fahrenheit. Weather conditions during the July 21, 2016 sampling event were clear and sunny with a high of 89° Fahrenheit.

During the first round of soil gas sampling on July 8, 2016, prior to obtaining each sample, an integrity test was performed using a helium tracer gas and shroud to evaluate the potential for ambient air infiltration through the sample point manway during sampling. During purging of the soil vapor point, a Mylar tent was set-up around the point; the Mylar tent was filled with inert helium. A helium detector was used to monitor the air sampling/purging pump effluent stream for the presence of helium. Meter readings were recorded in the field notes. All five (5) soil gas monitoring points passes the integrity test.

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10.5 Soil Vapor Sampling Methodology (Continued)

To further validation of the integrity test, the first round of soil gas samples, collected on July 8, 2016, were analyzed by the analytical laboratory for the presence of helium via EPA Method 3C. All five (5) soil gas samples and one (1) duplicate sample were all non-detect for the presence of helium. Due to the passed integrity test and subsequent analytical validation, further integrity tested was not warranted for the second round of soil gas sampling on July 21, 2016. Methods for soil vapor sample point integrity testing and vapor purge are described in **Appendix C**. The results of pre-sampling integrity testing and analytical validation passed the test as discussed in **Appendix C**, supporting a sufficient seal was maintained for representative sampling with minimal infiltration of ambient air.

Each soil vapor monitoring point was purged in advance of sampling. Following the vapor purge, laboratory certified 6-liter Summa canisters were fitted with properly calibrated regulators to allow for an approximate 30-minute draw, representing a flow rate of 200 mL/minute. This flow rate was used to limit the potential for surface short circuiting. Each sample was terminated while the Summa canister is still under vacuum conditions. Additional information that was documented for each sample included: purge volume, ambient air temperature, sample start and end time, canister identification, and restrictor identification.

The Summa canisters were labeled for transport to a National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratory while maintaining proper chain of custody protocol. Soil vapor samples were analyzed for the following parameters: 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, cumene, and naphthalene via EPA Method TO-15, and helium via EPA Method 3C.

10.6 Soil Vapor Sample Analytical Results

Soil vapor sample analytical results from sampling performed on July 8, 2016 and July 21, 2016 are summarized within **Table 5** (Soil Vapor Analytical Summary). Detectable concentrations are compared to the PADEP Residential MSC for soil vapor and used for evaluation of soil and groundwater impacts being remediated via SHS. Soil vapor MSC screening values were derived by dividing the corresponding indoor air MSC by an attenuation factor of 0.01:

$$\text{PADEP Soil Vapor MSC} = \frac{\text{PADEP Indoor Air MSC}}{0.01}$$

During the July 8, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for 1,2,4-TMB, 1,3,5-TMB, benzene, ethylbenzene, and total xylenes. In addition, naphthalene was not detected, but the laboratory PQL was greater than the PADEP Residential Soil Vapor MSC. Concentrations of all other analyzed constituents were either below their respective PADEP Residential MSC or below laboratory PQLs.

10.6 Soil Vapor Sample Analytical Results (Continued)

During the July 21, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for benzene. In addition, naphthalene was not detected, but the laboratory PQL was greater than the PADEP Residential Soil Vapor MSC. Concentrations of all other analyzed constituents were either below their respective PADEP Residential MSC or below laboratory PQLs.

Refer to **Figure 2** for soil vapor monitoring point locations, to **Table 5** for a soil gas analytical summary, and to **Appendix F** for soil vapor sample laboratory analytical reports for sampling performed in July 2016.

Soil gas sampling results indicate a current risk for soil vapor migration into the former Cooks Country Store building, therefore warranting remediation to reduce concentrations of soil and groundwater contributing to vapor intrusion. Because remediation is planned, no further assessment is warranted at this time.

The former convenience store building is currently vacant; if at any time, occupation of the former convenience store building is planned, further assessment or mitigation should be completed. Following site remediation, additional soil gas samples will be collected to verify whether vapor intrusion has been adequately addressed.

11.0 UPDATED SITE CONCEPTUAL MODEL

The analytical results from soil and groundwater samples collected during site characterization activities indicate that petroleum hydrocarbon constituents typically associated with a release of unleaded gasoline are present at concentrations exceeding the current PADEP RUA MSCs. The nature and extent of the unleaded gasoline release and potential migration pathways were evaluated through the comparison of current soil and groundwater analytical data in relation to the geologic and hydrogeologic settings of the facility. The conceptual site model (CSM) developed from the evaluation is discussed in the following sections.

11.1 Aquifer System

Overburden soil extends to a depths of approximately 20 feet bgs where competent red shale bedrock is encountered. Overburden material consists of a clay, sand, silt, gravel, and sandstone cobbles. Initial saturation was observed between 3 and 10 feet bgs during the advancement of soil borings. According to data obtained from groundwater sampling events conducted from August 2015 to August 2016, SWL measurements range from 0.89 feet btoc at MW-6 and 3.69 feet btoc at MW-11.

Groundwater on the subject property flows in a northerly to easterly direction toward Yellow Branch Creek and Great Trough Creek at an average gradient of 0.011 ft/ft. Refer to **Figures 7** through **10** for a Cross Section Location Map, and Cross Sections A-A', B-B', and C-C'. **Figures 11** through **14** illustrate groundwater flow contours for the previous four (4) rounds of monitoring.

11.2 Source Area and Contaminants of Concern

The source area consists of impacted soil in the vicinity of the former dispensers for the UST system removed from the property in November 2014. One (1) 4,000-gallon unleaded gasoline tank (Tank 004), one (1) 3,000-gallon unleaded gasoline tank (Tank 005) and one (1) 2,000-gallon unleaded gasoline tank (Tank 006) and the associated product lines and dispensers, installed on the property in May 1997, were removed from the property. The source of release is believed to be caused from faulty gasoline dispensing equipment and/or piping/connections immediately beneath the dispensing equipment.

Soils uncovered beneath the dispenser island were noted to be heavily impacted. Unleaded gasoline-impacted soil beneath the dispensers was excavated three (3) feet in all directions for exploratory purposes, and impact was still evident. During UST closure, soil samples were collected from the tank field (two sidewalls), product piping (one), and dispenser island (two). Both dispenser island soil samples exceeded the PADEP RUA soil to groundwater MSCs for 1,3,5-TMB, 1,2,4-TMB, benzene, and ethylbenzene, and one (1) of the dispenser island samples exceeded the PADEP RUA soil to groundwater MSC for toluene.

Analytical results from a soil boring investigation indicate that 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, and naphthalene have been detected at concentrations exceeding PADEP RUA unsaturated soil to groundwater MSCs and are the COCs for soil. MTBE was not detected, but the laboratory PQLs were greater than the PADEP RUA soil to groundwater MSCs, so MTBE remains a COC for soil. Analytical results from recent groundwater samples indicate that 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene have been identified in groundwater at concentrations exceeding PADEP RUA groundwater MSCs and are the COCs for groundwater. An additional COC, cumene, was detected in soil and groundwater above the laboratory PQLs but below the PADEP RUA MSCs.

Based on evaluation of site data, unleaded gasoline constituents were released to the soil beneath the most recent dispensers. Impacts spread out laterally mostly to the downgradient relative to groundwater flow, but also to a lesser extent to the sidegradient and upgradient, creating a broad yet shallow smear zone. The upgradient and side gradient component of migration is believed to be a combination of following:

- Shallow overburden groundwater which intersects fill areas or areas disturbed by historic property development, potentially causing impacts and smearing to spread faster than if through native soil.
- Groundwater mounding due to recharge in the gravel areas to the north and south of the former convenience store; slight mounding after rain events caused by rapid infiltration due to shallow groundwater elevation may have caused the smear zone to push upgradient and sidegradient.

11.2 Source Area and Contaminants of Concern (Continued)

- Variable groundwater flow direction from northerly to easterly; likely because the property is surrounded by streams to the east, west, and north; surrounding streams may influence overburden groundwater flow based on varying recharge and discharge to and from the aquifer which could be the result of many conditions including flood, drought, and seasonality.
- A low groundwater gradient; an average gradient of 0.011 ft/ft was calculated; a low gradient may exacerbate mounding and variability in flow direction.

The smear zone (area of soil impacts) has been reasonably delineated in the area of and surrounding the former dispenser islands. Unsaturated soil impacts are inferred to extend beneath the former convenience store building. In addition, unsaturated soil impacts extend beneath the SR3019 right of way/roadway. A saturated exceedance of 1,2,4-TMB was identified in soil boring SB-30, located across SR3019; however, PADEP interprets saturated soil impacts as a groundwater issue (refer to **Table 3** and **Figure 15**).

11.3 Groundwater Flow and Constituent of Concern Migration

COC migration in the overburden aquifer occurs via diffusion and advective transport. Diffusion is a process where dissolved phase contaminants move from areas of higher concentration to areas of lower concentration. The diffusion of constituents in groundwater at the subject property is evidenced by the detections of constituents in monitoring well MW-10, located laterally to the source area.

Advective transport is a process where dissolved phase contaminants are carried through an aquifer at a velocity proportional to groundwater flow in the same direction as the groundwater gradient. Advective transport of dissolved phase constituents as the subject property is evidenced by the detection of COCs in monitoring wells MW-6 and MW-12, located downgradient of the source area. Refer to **Appendix H** for groundwater isoconcentration maps illustrating the extent of dissolved phase constituent concentrations in excess of the PADEP RUA groundwater MSC during the previous two (2) comprehensive rounds of groundwater sampling.

The property line at the time of release is considered the point of compliance (POC). It should be noted that the edge of the SR994 right of way is effectively the POC from the northeast to southeast direction. Based on the current footprint of the groundwater plume, the following wells are considered POC wells:

- MW-5 (Across SR3019) – Sidegradient to Downgradient
- MW-6 (Across SR3019) – Downgradient
- MW-8 – Upgradient
- MW-9 – Upgradient
- MW-10 – Sidegradient
- MW-11 – Sidegradient
- MW-12 – Downgradient

11.3 Groundwater Flow and Constituent of Concern Migration (Continued)

Based on evaluation of site data, unleaded gasoline constituents were released to the soil immediately underlying the most recent dispensers and spread out laterally as described in **Section 11.2**. Dissolved-phase impacts to shallow groundwater continuously emanate from the established smear zone. Chemical differentiation due to constituent solubility differences have allowed more soluble COCs such as benzene, 1,2,4-TMB, and 1,3,5-TMB to migrate further than other COCs. The following observations were noted:

- In the downgradient direction to the east to northeast, MW-5 has contained exceedances of 1,2,4-TMB and benzene; and MW-6 has contained relatively low level exceedances benzene.
- In the downgradient direction to the northeast to the north, MW-7 has contained exceedances of 1,2,4-TMB and benzene; and MW-12 has contained relatively low level exceedances 1,2,4-TMB and 1,3,5-TMB.
- In the sidegradient direction to the northwest, MW-10 has contained exceedances of 1,2,4-TMB, 1,3,5-TMB, and benzene; during the most recent groundwater sampling event, MW-10 was non-detect for all COCs; however, the groundwater flow direction was shifted to the east during that event.
- Both upgradient overburden monitoring wells, MW-8 and MW-9, have been non-detect during all sampling events.
- Bedrock monitoring well MW-1D, two (2) on-site supply wells labeled Inside Well and Outside Well, and the downgradient off-site supply well labeled Cessna Well have been non-detect during each sampling event.

Groundwater impacts in the overburden aquifer have been reasonably delineated in all directions; however, low level concentrations remain at the farthest downgradient monitoring wells MW-6 and MW-12. Monitoring well MW-6 has contained benzene at concentrations exceeding the PADEP RUA MSCs; however, during the most recent sampling event at MW-6 on May 10, 2016, benzene concentrations fell below the PADEP RUA MSC. Monitoring well MW-12 has contained 1,2,4-TMB and 1,3,5-TMB at concentrations exceeding the PADEP RUA MSCs; however, during the most recent sampling event at MW-12 on August 3, 2016, 1,3,5-TMB concentrations fell below the PADEP RUA MSC. The concentration of 1,2,4-TMB (32.2 µg/L) in MW-12 remained above the PADEP RUA MSC (15 µg/L) for 1,2,4-TMB. Monitoring well MW-10 has contained 1,2,4-TMB, 1,3,5-TMB, and benzene at concentrations exceeding the PADEP RUA MSCs; however, during the most recent sampling event at MW-10 on August 3, 2016, all COC concentrations fell below the PADEP RUA MSCs.

Because active remediation via soil excavation and VEGE is planned, Mountain Research believes that low-level COC concentrations in downgradient monitoring wells MW-6 and MW-12, and concentrations in sidegradient monitoring well MW-10 on May 10, 2016, are on the fringes of the groundwater plume. Mountain Research believes that the groundwater plume is reasonable delineated considering the planned remedial strategies, and that the strategy will remediate the plume back from the vicinity of MW-6, MW-10, and MW-12.

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11.3 Groundwater Flow and Constituent of Concern Migration (Continued)

Mountain Research installed bedrock monitoring well MW-1D within the center of the soil source area and groundwater plume. Two rounds of groundwater samples have been non-detect for all COCs; therefore confirming that impacts have not migrated vertically into the shallow bedrock. This observation is further confirmed by the sampling of two (2) on-site supply wells labeled Inside Well and Outside Well, and the downgradient off-site supply well labeled Cessna Well. The three (3) supply wells have been non-detect during two (2) rounds of sampling. All three (3) supply wells will remain part of the groundwater sampling program until demonstration of attainment in achieved for groundwater, or PADEP approved discontinuance of sampling.

12.0 GROUNDWATER FATE AND TRANSPORT

12.1 Quantitative Fate and Transport Discussion

A quantitative New Quick Domenico (QD) fate and transport model was previously produced to assess the transport of dissolved phase COCs within the overburden aquifer. The model used maximum concentrations for of 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene. The maximum concentrations within the dataset have not changed. A 30-year predictive simulation was completed for each modeled COC. Please refer to the February 2016 *SCR* for more details.

Although initial hydraulic conductivity values derived from aquifer slug tests have been determined to be invalid, the values used for each QD model were subjected to a sensitivity test. Model-specific hydraulic conductivity values were used at up to one (1) order of magnitude deviation from the initial slug test value based on the most conservative scenario. Therefore, the results of the quantitative model are reasonable.

Based on the presence of soil and groundwater impact beneath SR3019 and the former convenience store building, and the need for active remediation, Mountain Research does not believe reassessment of the quantitative model is warranted at this time.

12.2 Qualitative Fate and Transport Discussion

Constituents 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene have been identified in the overburden aquifer at concentrations exceeding the PADEP RUA groundwater MSCs. The fate and transport of these compounds are controlled by their specific chemical characteristic and by the characteristics of the aquifer.

As described in **Section 11.3**, the transport of dissolved phase overburden groundwater impacts is predominately controlled by diffusion and advective transport along groundwater flow direction and gradient. Constituents 1,2,4-TMB, 1,3,5-TMB, and benzene are migrating to the north to east with a fluctuating groundwater flow direction, and during one (1) groundwater sampling event, to the west at MW-10.

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12.2 Qualitative Fate and Transport Discussion (Continued)

However, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene above the PADEP RUA MSCs have remained within the source area (**Figure 15**) and have not yet migrated toward the downgradient wells MW-5, MW-6, MW-7, MW-10, and/or MW-12. Constituents' toluene, ethylbenzene, total xylenes, MTBE, and naphthalene have been detected at concentrations below PADEP RUA MSCs within downgradient wells. Only benzene has been detected above PADEP RUA MSCs in far downgradient well MW-6; only 1,2,4-TMB has been detected above PADEP RUA MSCs in far downgradient well MW-12. During one groundwater sampling event, benzene and 1,2,4-TMB were detected in sidegradient monitoring well MW-10 at concentrations exceeding PADEP RUA MSCs. **Section 11.3** describes the possibility that fluctuating COC exceedances in MW-10 may be attributed to a shifting groundwater flow direction. Refer to **Appendix H** for groundwater isoconcentration maps.

Dissolved phase COCs will likely continue to migrate in a north to east direction along with the gradient. The migration of COCs may be inhibited due to adsorption to clay-rich soils and other retardation factors such as natural attenuation; however, several additional observations should be noted:

- Dissolved phase concentrations within the source area (MW-1) have been fluctuated greatly since commencement of groundwater sampling, but have generally decreased since December 2015.
- A qualitative review of plume stability based on source and periphery wells indicates highly fluctuating concentrations, which could be indicative plume instability. The fluctuations could also be attributed to smear zone flushing during the rise and fall of groundwater elevations in the very shallow overburden aquifer; however, groundwater concentrations do not appear to correlate with groundwater elevations. Although, the rise and fall of groundwater elevations may occur on a much smaller scale compared to sampling frequency, therefore limiting resolution.

13.0 CONTAMINANT MASS CALCULATION

A groundwater contaminant mass calculation was conducted to estimate groundwater contaminant mass at subject site. The mass calculation was evaluated using contaminant concentration data collected during the May 10, 2016 sampling event, Site Map and aquifer parameters. Coordinates of the well locations were extracted from the site map (**Figure 2**).

The effects of porosity and adsorption are accounted for as follows:

$$C_{aquifer} = C_{gw}*(n + k_{oc}*f_{oc}*G)$$ **, where:**

$C_{aquifer}$ = mass of contaminant in unit volume of aquifer
C_{gw} = mass of contaminant in unit volume of groundwater
n = porosity
k_{oc} = organic carbon to water partition coefficient
f_{oc} = fraction of organic carbon
G = specific gravity of aquifer

13.0 CONTAMINANT MASS CALCULATION (Continued)

A site specific effective porosity value of 33 percent, specific gravity of 2.56 and default fraction of organic carbon of 0.02 were used for the calculation of contaminant mass within the overburden aquifer. These values were obtained from geotechnical samples from soil boring MW-3 at the site except for fraction of organic carbon which was given a conservative default value. Organic carbon to water partition coefficients for each compound were taken from the PADEP Act 2 Regulation tables. COC's with detectable concentrations in groundwater within the overburden at the site include; BTEX, MTBE, naphthalene, and TMB.

Once porosity and adsorption effects have been computed, the concentration data and aquifer thickness are used to compute the contaminant plume to determine the mass of contaminant per unit area of overburden aquifer. The following is a list of monitoring wells used in the calculation of contaminant mass, along with corresponding aquifer thicknesses

Monitoring Well	Aquifer Thickness (ft)
MW-1	10
MW-2	10
MW-3	10
MW-4	10
MW-5	8.78
MW-6	9
MW-7	9
MW-10	11
MW-11	2.31
MW-12	2.85

Once the mass per unit volume was computed at each sampling point, the data were interpolated using the grid function of Surfer© (Golden Software). For the purposes of this computation, non-detect results were assigned the value zero. Interpolated data were integrated using the Volume function in Surfer©. The summed contaminant mass values for each COC are tabulated below.

Data input/output values used in the calculation of mass have been summarized in the following table.

Date	BTEX & Cumene Mass (g)	Naphthalene Mass (g)	MTBE Mass (g)	TMB Mass (g)	Total Contaminant Mass (g)
5/10/16	125,200.03	14,464.29	16.14	144,517.51	284,197.97

Baseline contaminant mass calculations using the comprehensive May 10, 2016 groundwater sampling event concluded that the mass of BTEX and cumene are 125,200.03 grams, naphthalene is 14,464.29 grams, MTBE is 16.14 grams, and TMB is 144,517.51 grams. The total baseline contaminate mass on May 10, 2016 is 284,197.97.

Contaminant mass volume data sheets have been provided as **Appendix I**.

14.0 ECOLOGICAL RECEPTOR EVALUATION

In accordance with Title 25 §250.311, an evaluation of ecological receptors was followed for purposes of assessing potential impacts to ecological receptor(s) as a result of petroleum impacted soil and groundwater at the property.

Based on a Pennsylvania Natural Diversity Inventory Environmental Review (PNDI ER), no known impact to an endangered or threatened species was identified. In addition, based on an evaluation of regulatory classifications, it is unlikely that an exceptional value wetland would be defined within the property based upon property characteristics; therefore, the probability of impact to an exceptional value wetland is considered negligible. Details regarding the evaluation are contained within the February 2016 *SCR*.

14.1 Ecological Screening Guidance

The guidance states the following must be considered to address potential impact(s) to ecological receptors. If any of the following criteria are met, no additional evaluation into ecological receptor impact(s) is required:

- Jet fuel, gasoline, kerosene, #2 fuel oil or diesel fuel are the only constituent's detected onsite.
- The area of contaminated soil is less than two (2) acres and the area of contaminated sediment is less than 1,000 square feet.
- The site has features such as buildings, parking lots consisting of gavel or pavement areas, which would obviously eliminate the specific exposure pathways, such as soil exposure.

The site meets the criteria contained within the ecological screening guidance.

The screening criteria has been met because the only constituents detected on-site are due to a release of unleaded gasoline; additional evaluation into ecological receptor impact(s) is not required.

15.0 CHARACTERIZATION OBJECTIVES

The following site characterization objectives were developed for site characterization:

- Identify the extent of impacted soil and groundwater
- Describe study area geology, hydrogeology, aquifer characteristics, and physical parameters such that a remediation standard and strategy for the site can be selected
- Develop a site conceptual model from which the fate and transport of contaminants can be evaluated
- Investigate groundwater supplies on the subject property and surrounding properties
- Evaluate VIB
- Evaluate the potential for ecological receptor exposure pathways

15.1 Cumulative Site Characterization Conclusions

Based on site characterization activities, the following conclusions have been made:

- From August 17 through 21, 2015, monitoring wells MW-1 through MW-4 were installed in the vicinity of the former dispenser area.
- From October 12 through 15, 2015, monitoring wells MW-5 through MW-8 were installed downgradient and upgradient of the source area to further delineate the groundwater plume.
- On March 16, 2016, overburden recovery well RW-1 was installed within the source area near MW-1 to facilitate remedial feasibility testing.
- From April 14 through 21, 2016, monitoring wells MW-9 through MW-12 were installed downgradient, upgradient, and side gradient of the source area to further delineate the groundwater plume.
- On July 18 and 19, 2016, bedrock monitoring well MW-1D was installed within the source area to provide vertical delineation.
- Groundwater monitoring events were conducted from August 2015 through August 2016.
- Overburden groundwater monitoring well analytical results indicate petroleum constituent concentrations detected above the PADEP RUA groundwater MSCs include 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, MTBE, and naphthalene.
- The identified dissolved phase plume above the PADEP RUA groundwater MSC is located in the centered vicinity of monitoring wells MW-1 and MW-3. The 1,2,4-TMB and benzene plumes have extended to the east across Cooks Road and downgradient to the north to the yard in front of the on-site residential house. The 1,2,4-TMB and benzene plumes have also been mapped to the west toward the yard behind the former convenience store building, sidegradient to groundwater gradient.
- On-site supply wells identified as the Inside Well and Outside Well, the off-site Cessna Well, and source area bedrock monitoring well MW-1D were all non-detect during two (2) rounds of groundwater sampling.
- A total of 50 soil borings have been advanced by Mountain Research at the property in order to fully characterize the site. A total of 63 soil samples were collected from soil borings MW-1 through MW-7; MW-8/SB-21; MW-9 through MW-12; MW-1D (Abandoned); SB-1 through SB-20; SB-22 through SB-24; SB-25/VP-3; SB-26 through SB-31; VP-1; VP-2; VP-3 (Abandoned); VP-4; and VP-5 from August 2015 through April 2016.

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15.1 Cumulative Site Characterization Conclusions (Continued)

- Based on analytical results, the soil surrounding the former dispenser area is impacted with constituents at concentrations above the PADEP RUA soil to groundwater MSC, including: 1,2,4-TMB, 1,3,5-TMB, benzene, toluene, ethylbenzene, total xylenes, and naphthalene. MTBE was not detected in any soil boring, but the laboratory PQL was greater than the PADEP RUA soil to groundwater MSC for many of the borings. Soil impacts were identified between one (1) and eight (8) feet bgs. Unsaturated soil impacts are present between one (1) and five (5) feet bgs. Unsaturated soil impacts are inferred to extend beneath the former convenience store building and extending beneath the SR3019 right of way/roadway.

- Based upon a site-wide assessment of seasonal groundwater elevations as well as observations logged during drilling activities, the zone of permanent saturation at this site is five (5) feet bgs and deeper. Saturated soil impacts were identified between five (5) and eight (8) feet bgs; however, PADEP interprets saturated soil impacts as a groundwater issue.

- The convenience store building and on-site residential house were determined to be receptors at risk of VIB from impacted soil and groundwater. Five (5) soil vapor monitoring points close to the two (2) on-site buildings were installed to evaluate VIB risk.

- Two (2) rounds of soil gas sampling were completed on July 8, 2016 and July 21, 2016. During the July 8, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for 1,2,4-TMB, 1,3,5-TMB, benzene, ethylbenzene, and total xylenes. During the July 21, 2016 soil gas sampling event, soil vapor monitoring point VP-1 exceeded the PADEP Residential Soil Vapor MSCs for benzene. Concentrations of all other analyzed constituents were either below their respective PADEP Residential MSC or below laboratory PQLs during each sampling event. In addition, pre-sampling integrity testing and analytical validation were performed and passed during the July 8, 2016 soil gas sampling event to ensure valid samples.

- Ecological receptor screening was performed; no ecological receptors were identified.

- Initial quantitative fate and transport modeling was completed for an initial assessment of migrations. Qualitatively, the plume appears unstable. Downgradient benzene concentrations identified in MW-6 may continue to migrate downgradient without remedial action. Downgradient 1,2,4-TMB and benzene concentrations identified in MW-7 and MW-12 may continue to migrate downgradient without remedial action.`

15.1 Cumulative Site Characterization Conclusions (Continued)

- Based on the current understanding of the site and the site owner's plan for the property, an active remediation based strategy is proposed subsequent to a limited soil source removal. VEGE is the preferred active remedial strategy, based on results of a feasibility study. The goal of the remediation is to remove all accessible source material and to remediate remaining soil and groundwater COC concentrations via remediation system.

Based on these conclusions, the objectives of the site characterization have been met, and no further delineation is warranted for the site at this time.

The following sections of this document (**Sections 17** through **21**) represent the Remedial Action Plan and include discussion of the remedial alternatives considered for the site, the details of the remedial treatment system feasibility testing methodology and data, design specifications for the selected limited soil excavation and treatment system components and methodologies, operational and maintenance plans, required permits, and routine reporting planned for the site.

15.2 Proposed Additional Investigative Activities

- Prior to occupation of the on-site residential home and/or former convenience store building, both on-site supply wells should be investigated with an optical televiewer to determine the exact construction. This information will be used to make decisions regarding the water supply. The wells are currently functional but not used routinely; once the building(s) are occupied and wells used to daily water supply, it is currently unknown whether any communication will exist between the supply aquifer and the impacted overburden aquifer.

- During the planned soil excavation, detailed observation, documentation, and additional characterization sampling and/or attainment sampling will be conducted on the sidewalls facing inaccessible areas. There may be undiscovered preferential pathways or it may be evident that impacts are only present in isolated areas where the final VEGE system design can be adjusted or enhanced to focus remediation.

16.0 SELECTION OF A REMEDIAL STANDARD

The remediation standard goal for the property is the SHS for soil and groundwater. The SHS will be sought due to the primary future use of the property as residential. The home and former convenience store building are currently unoccupied; however, the home is under renovation for near future occupancy.

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17.0 REMEDIAL ALTERNATIVES ANALYSIS – 245.310 (*a*)(*30*)

The following technologies were considered for this site:

- *No Remediation*
- *Groundwater extraction and treatment*
- *Soil vapor extraction (SVE)*
- *Enhanced bioremediation*
- *Total phase extraction (TPE)*
- *Excavation and removal*
- *Vacuum Enhanced Groundwater Extraction (VEGE)*

Although each of the technologies could be applied to the site, several technologies were considered inappropriate.

17.1 No Remediation

No active remediation is not considered a viable remedial approach. Concentrations of constituents in soil and groundwater are well above PADEP RUA MSCs, and the SHS closure is sought due to planned residential use of the property.

17.2 Groundwater Extraction

Groundwater extraction is not a feasible technology for the overall treatment of site soil and groundwater. Because of the limited groundwater yielding capabilities of the on-site overburden aquifer without applied vacuum, this technology alone would be greatly limited. Groundwater extraction will not address impacted unsaturated soils; therefore, groundwater extraction is not a viable option on its own.

17.3 Soil Vapor Extraction

SVE is not appropriate in soils that are saturated within three (3) feet of the surface. The vacuum placed upon the extraction well has the potential to cause upwelling of the groundwater surface, therefore consideration of this mounding affect is required while designing the extraction well. Wells installed too close to the surface or too close to preferential pathways may short circuit and loose vacuum, thus limiting ability to extract VOCs. Due to the presence of overburden groundwater less than three (3) feet bgs in some areas and saturated soils encountered between five (5) and eight (8) feet bgs, SVE is not a viable option on its own.

17.4 Enhanced Bioremediation

In-situ bioremediation requires the extraction of groundwater and injection of augmented water into an aquifer

Enhanced bioremediation essentially builds upon extraction and treatment by re-injecting the extracted/treated water after adding nutrients, bacteria and dissolved oxygen. This process enhances the remediation by promoting in-situ bacteria degradation of contaminants both in dissolved and sorbed phases. The objective is to significantly shorten the operation and maintenance period of an extraction and treatment only system.

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17.4 Enhanced Bioremediation (Continued)

The added cost of the bioenhancement can be offset by shorter operation time of the system, and can result in overall remedial savings.

Because of the limited groundwater yielding capabilities of the on-site overburden aquifer without applied vacuum, the higher costs, and the pursuit an SHS closure path, enhance bioremediation is not a via option.

17.5 Excavation and Disposal

Soil excavation and disposal involves the removal of contaminated media from the site and transport to either a landfill or a treatment facility. Soil excavation and disposal is a viable option and will be conducted to remove all accessible unsaturated source material at this site. It is anticipated that remedial excavating will remove most of the impacted soils from the site, primarily in the source area; however, impacted soil will remain under SR3019 (PennDOT right of way), and the former convenience store building where excavation is not feasible.

17.6 Total Phase Extraction (TPE)

TPE removes a combination of both groundwater and soil vapor. A drop tube is utilized to apply vacuum to the well. The entrance to the tube is cut at an angle, to enact a slurping effect for the simultaneous extraction of groundwater and soil vapor. TPE is considered an efficient remedial technology for areas of low groundwater yield with soil contamination. TPE is not considered a viable remedial option for this site, considering that the required vacuum determined by feasibility testing produced a consistent groundwater yield rate. A TPE vacuum system would be expected to repeatedly cycle off for removal of liquid from vapor-liquid separators (VLS) for treatment of extracted groundwater. Also, during the periods of high water levels, the system may extract mostly groundwater, limiting the effectiveness of remediating soil impacts remaining within areas inaccessible to excavation. A large area of excavation fill material may exasperate this condition.

17.7 Vacuum Enhanced Groundwater Extraction (VEGE)

VEGE is a process that includes extracting both groundwater and soil vapor continuously from the overburden aquifer. VEGE is a viable remedial option for the site due to the presence of impacted soils and increased groundwater extraction provided by the wells being under vacuum. VEGE feasibility testing indicated that groundwater influences were observed in surrounding monitoring wells, and the groundwater flow rate from the well was significantly increased from the applied vacuum. A VEGE system uses vacuum to increase groundwater extraction from each well, or groundwater extraction can be used to dewater the smear zone for enhanced remediation of soil impacts.

Since this site will undergo an extensive soil excavation and the remaining impacts are mostly a groundwater issue except for areas beneath the former convenience store building and SR3019, the VEGE system is preferred to focus on enhanced groundwater extraction while remediating overburden soil impacts as a secondary effect.

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17.7 Vacuum Enhanced Groundwater Extraction (VEGE) (Continued)

The current and future use of the property will not be affected by this form of remediation because the remediation system will be contained within an on-site shed, with conveyance of treated groundwater to the treatment system within shallow trenching.

The installation of a VEGE remediation system at the site is considered necessary to remediate inaccessible soil impacts and to limit current and future impact from dissolved phase COCs beyond the POC.

18.0 REMEDIAL FEASIBILITY TESTING

Mountain Research conducted remedial feasibility testing at the site during late June 2016 (June 28 and 29) in order to identify site overburden aquifer characteristics applicable to the design of a groundwater remedial treatment system for the site. The feasibility testing included the evaluation of groundwater extraction and then VEGE on RW-1.

RW-1 is a four (4) inch diameter recovery well located in the center of the source area, hydraulically downgradient of the former dispenser area. Refer to **Appendix D** for extraction and monitoring well construction logs.

18.1 Pre-Feasibility Test Set-up and Background Data Acquisition

Prior to remedial feasibility testing, site background groundwater elevations and barometric pressure data was acquired with the use of an Dwyer SBLT2 transducers placed site overburden monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-7. In addition to the automated monitoring of the transducers, groundwater elevations were measured by hand, collected at MW-3, MW-5, and MW-6, prior to initiation of the feasibility testing. Refer to **Figure 2** for a well locations.

A temporary discharge permit was obtained for the purpose of this feasibility testing. Two 150lb liquid carbon vessels were set up in series for the treatment of extracted groundwater prior to discharge into and unnamed tributary of Yellow Branch, a trout stocked fishery. Surficial piping was run from the liquid carbon treatment to the discharge location. Refer to **Appendix J** for a copy of the discharge permit, **Appendix K** for a copy of feasibility testing results, **Figure 16** for a feasibility testing process flow diagram and **Figure 17** for the discharge location.

18.2 Groundwater Extraction Testing on RW-1

Groundwater extraction from site extraction well RW-1 was performed on June 28, 2016 for approximately 4.65 hours, during which time groundwater elevations were monitored select site monitoring wells via hand measurement and programmed In-Situ Hermit level troll transducers in selected site monitoring wells. Groundwater extraction feasibility testing was performed using a submersible electric pump for the first portion of the test. After the well was significantly dewatered (failing to recharge above the intake of the pump) a pneumatic pump was utilized in the well. A total of 164.6 gallons of groundwater were extracted over four hours and 39 minutes. Due to low groundwater extraction volume and minimal / negligible peripheral drawdown in surrounding site monitoring wells, the site was prepared for VEGE feasibility testing on site recovery well RW-1. Refer to **Appendix K** for feasibility test data.

18.3 VEGE Feasibility Testing (EW-4)

VEGE feasibility testing on site extraction well RW-1 was initiated on the morning of June 29, 2016, and continued for approximately 6 hours. Prior to the application of vacuum to RW-1, and electric pump was used to dewater the well in order to establish a normalized withdrawal rate (without potential vacuum enhancement) from the well. During the next hour, a low level vacuum (38.34" water column [in. w.c.], 2.8 inches of Mercury ["Hg]) was applied to the well. A mid-range vacuum (61.52 in. w.c., 4.5" Hg), was next applied to the well for a period of approximately 1 hour 15 minutes, and a high level vacuum (117.19 in. w.c., 8.6" Hg) was applied for the remaining 4 hours and 15 minutes of the VEGE feasibility test. During VEGE feasibility testing at extraction well RW-1, site monitoring wells were monitored for groundwater elevations and vacuum levels via hand measurement and transducers.

In addition to monitoring groundwater elevations vacuum levels were monitored via transducers and magnahelic gauges in site monitoring wells to determine radius of influence of applied vacuum levels. High vacuum VEGE testing demonstrated an estimate radius of influence (ROI) of 26 feet. Mid and low vacuum VEGE testing demonstrated no perceivable ROI. Extracted soil vapor samples were also obtained during each vacuum level interval described above through a sampling port located at the extraction well head with Summa air canisters and subsequently sent for laboratory analysis for targeted parameters via EPA method TO-15. Soil vapor sample laboratory results indicate a direct relationship between applied vacuum levels and contaminant concentration values, with significantly greater quantities of all target parameters withdrawn from RW-1 under high vacuum conditions (8.6 inches Hg), as opposed to mid and low vacuum levels. Refer to **Appendix K** for feasibility test data and ROI calculations. Soil vapor sample laboratory data sheets from feasibility testing samples are contained within **Appendix L** and an analytical summary table of feasibility testing soil vapor sampling results is included as **Table 6** with the feasibility test data. Pneumatic radius of influence analysis of the site during the VEGE testing was only observed during high vacuum testing. Refer to **Figure 18** for a high vacuum pneumatic influence map.

Groundwater extraction from EW-4 was significantly impacted by the application of vacuum on the well along with the level of vacuum applied. Results of the VEGE testing show the pumping rate for the extraction well under each vacuum levels were as follows;

No Vacuum:	0.59 gpm
Low Vacuum (2.8" of Hg):	0.23 gpm
Mid Vacuum (4.5" of Hg):	0.14 gpm
High Vacuum (8.6" of Hg):	1.81 gpm

These test results indicate that by applying low vacuum to the extraction well the extraction rate decreased by 61%; medium vacuum decreased the extraction rate by 76%; and high vacuum increased the extraction rate by 307%. This significant increase in extraction rate makes a high vacuum VEGE system the most desirable remedial technology for groundwater extraction.

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18.3 VEGE Feasibility Testing (EW-4) (Continued)

High vacuum VEGE testing also demonstrated a ROI of 70 feet, verse 36 feet and 27 feet for mid and low vacuum tests, respectively. Aqueous influent samples were collected during all feasibility tests. High vacuum VEGE demonstrated the highest overall extraction of contaminants of concern. Refer to **Appendix K** for feasibility testing data and ROI calculations. Feasibility testing aqueous sampling laboratory analytical data sheets can be found in **Appendix M**, a summary of feasibility testing aqueous sampling analytical summary is located in **Table 7**. Refer to **Appendix K** for all feasibility test data. Refer to **Figure 19** for a high vacuum VEGE feasibility testing groundwater drawdown map.

Prior to and subsequent to VEGE feasibility testing at RW-1, groundwater samples were obtained from site recovery well RW-1, before and after VEGE testing and analyzed for selected metals via EPA method 6010 for remedial system design calculations regarding carbon fouling. Laboratory analytical data sheets are contained within **Appendix M**.

18.4 Impacted Groundwater Discharge

During feasibility testing, a total of 535 gallons of groundwater were extracted, treated, and discharged between June 28 and June 29, 2016. The groundwater was discharged to an unnamed tributary of Yellow Branch, as per the Temporary Discharge Permit. Refer to **Appendix J** for a copy of the Temporary Discharge Permit. All remedial feasibility testing equipment has been demobilized from the site. The carbon utilized for both the vapor and liquid treatment is to be drummed as non-hazardous waste and transported for proper disposal.

19.0 REMEDIAL DESIGN

Based upon site characterization activities, as well as groundwater extraction and VEGE feasibility studies, a total of seven (7) overburden VEGE wells and one (1) potential VEGE well will be utilized for site remediation. Prior to installation of VEGE wells and associated remedial activities, an excavation will be performed to remove the majority of the contaminated soil from the source area. Note that the remedial design must be revisited following the soil excavation. Additional characterization/observations will be collected during soil excavation and may identify preferential pathways leading beneath the roadway or demonstrate that the impacted portions of inaccessible building and/or SR3019 is smaller or larger than what soil boring data only could provide.

All VEGE wells will be installed in native soil, with the exception of a VEGE well installed in the center of the remedial excavation. The purpose of this well is primarily to dewater the backfilled excavation area. One optional well is proposed to be installed across SR3019. This well will be installed in the event that COC concentrations in MW-5 and MW-6 increase after implementation of remedial activities on the release side of SR3019. Additional fate and transport modeling and plume stability analysis may also be completed to show whether or not future COC concentrations in MW-5 and MW-6 are a concern.

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19.0 REMEDIAL DESIGN (Continued)

VEGE wells will receive an applied vacuum level of 8.6"Hg. This is the level of vacuum applied during high vacuum feasibility testing. The increased groundwater extraction rate of the high vacuum application will enable a faster remedial cleanup time by increasing the contaminant extraction rate through groundwater, as well as treating contaminated soils through SVE. This remedial technique has been identified as the most cost effective and efficient remedial strategy through feasibility testing.

Conduit trenches will be constructed to facilitate transfer of extracted groundwater and vapor from VEGE wells to a remedial system building. A remedial system shed will house all equipment needed to extract and treat groundwater and vapor. Refer to **Figure 20** for the conceptual location of extraction wells, conduit trenches, and the remedial system building.

19.1 Remedial Excavation

A remedial excavation is planned for removal of all accessible unsaturated impacted soil at the site. Due to the relatively shallow depth of unsaturated soil impacts from one (1) to five (5) feet bgs, most impacted soils are accessible for removal. Soil samples collected during boring activities, well installations, and soil vapor sampling were analyzed to determine the proposed extents of soil to be excavated. The proposed excavation area is located primarily over the removed dispenser island and extending to the northeast and southwest. Upon excavation, soils will be loading directly onto haulers for proper disposal off site. An estimated volume of 699 cubic yards of soil are anticipated to be loaded out. If grossly impacted soils are identified below the zone of permanent saturation during soil excavation activities, a decision in the field may be made to remove some or most of these impacts to aid in groundwater plume stability and reduce the risk of continued vapor intrusion issues. Soils will be field screened with a photoionization detector to direct the depths and extents of the excavation. The area will be backfilled with clean 2A stone, and topped with a two (2) foot layer of compacted clay before asphalt is installed. The compacted clay and asphalt will reduce the potential for short circuiting. Refer to **Figure 21** for the proposed extents of the excavation overlaid with soil boring locations and **Table 3** for soil sample analytical results.

19.2 Clay Dike Installations

It is already known that the onsite residential structure has a septic system that is plumbed beneath SR3019 for discharge into a leach field. This discharge line is a potential preferential pathway for contaminant migration underneath the roadway. Upon completion of excavation activities, this line, along with any other obvious preferential pathways beneath the roadway, will receive the installation of a compacted clay dike. These dikes will eliminate the potential for contaminant migration, and enclose contaminants within an area under remedial influence, after system installation is complete. Clay dikes will not be utilized on preferential pathways beneath the former convenience store building. Inaccessible contamination beneath this building will be remediated with VEGE.

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19.3 Extraction Wells

Extraction well RW-1 will be reinstalled within the excavation area for dewatering of the excavation backfill as well as vapor recovery. Seven (7) additional VEGE wells will be installed at the site (RW-2 through RW-8). One (1) optional VEGE (RW-9) may be installed on the opposite side of SR3019. The decision whether or not to install RW-9 will depend on the performance of the cumulative influence of the RW-1 through RW-8 to extract vapor from across SR3019. Vacuum influence will be monitored closely at MW-5 and MW-6 following system start-up. Refer to **Figure 22** and **Figure 23** for VEGE well locations with respect to groundwater and soil contaminations, with groundwater extraction ROI and soil vapor extraction ROI respectively.

Each VEGE well will be installed using 8.25 inch diameter hollow stem auger drilling techniques. The wells will be constructed with four-inch diameter schedule 40 flush-threaded polyvinylchloride (PVC) 0.010 inch wire wrap screen and blank riser pipe. The screened interval will be set at 2-8 feet bgs during installation of remedial trenching. Above the screened interval, blank PVC riser pipe will be installed to just below surface grade. The annulus between the borehole and PVC screen will be filled with clean quartz sand to a level approximately one (1) foot above the well screen. Approximately 1 foot above the sand, hydrated bentonite will be added for to create a one (1) to two (2) foot seal. The remaining annulus above the bentonite will be occupied by subsurface wellhead connections and associated stone backfill. The wells will be finished at the surface with two (2) foot by two (2) foot drive over steel curb boxes surrounded by a concrete pad. The top of each casing will be equipped with subsurface pressurized air supply, groundwater recovery, and vapor recovery connections. A VEGE well construction diagram is presented as **Figure 24,** and wellhead construction is presented as **Figure 25**.

19.4 Conduit Network

An underground conduit network will be constructed to convey the groundwater and vapors from the extraction wells to the treatment system. All VEGE wells will have a dedicated two (2) inch inner diameter schedule 40 PVC piping run for vapor phase extraction, a one (1) inch inner diameter PVC piping run for groundwater extraction, and a 3/8 inch compressed air line for air delivery.

In the event that the optional VEGE-8 well is installed, compressed air and groundwater extraction lines will need advanced across SR3019. A horizontal boring will be installed 36" beneath the roadway, enclosed by a six (6) inch diameter steel casing. A compressed air delivery line, groundwater extraction line, and SVE line will be installed through this casing to reach VEGE-8. Utilizing a horizontal boring, no traffic or asphalting will be disturbed. A PennDOT Right of Entry agreement will need to be completed to install the horizontal boring beneath the roadway.

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19.4 Conduit Network (Continued)

The underground conduit network will be constructed as individual trenches from each extraction well branched off of a common trench to the treatment system. Each trench will be constructed to a depth below frost line (approximately 3 feet) and backfilled with 2RC stone and capped with asphalt. See **Figure 20** for the conceptual layout of the conduit trench system. Refer to **Figure 26** for remedial trenching cross sections.

All excavated soils from trenching activities will be stockpiled for proper disposal.

19.5 Remedial System Enclosure

The remedial treatment system will be housed inside of a system shed. The enclosure will be appropriately sized to contain the remedial components. Heating and ventilation will be controlled by a thermostat, which will operate an electric heater and exhaust fan.

The remedial system enclosure will be constructed to meet OSHA Class 1 Division 2 Hazardous Location standards. The system will also be constructed to meet all local and state required codes. The remedial system process flow diagram is presented as **Figure 27**.

19.5.1 Remedial Treatment Equipment

Remedial treatment equipment includes a vacuum pump, vapor liquid separator (VLS), air compressor, transfer pumps, pneumatic pumps, vapor and liquid phase carbon vessels, equalization tank, sediment filtration, telemetry, and automated control equipment. Refer to **Appendix N** for design calculations for equipment sizing.

19.5.1.1 Vacuum Pump

A vacuum extraction pump will operate to extract vapors from the overburden extraction wells for treatment within the remediation system. The vacuum pump will be interconnected to all VEGE wells through underground PVC conduit, the VLS tank and the vapor GAC units. The vacuum pump will be sized to produce a vacuum of 9" of Hg at each well head and produce a total vapor flow rate of 32 actual cubic feet per minute (acfm) from each well. Based on the enclosed design the vacuum pump will be rated for 13 inches of Hg at the pump inlet and produce 275 actual cubic feet per minute (acfm) at the pump inlet. The vacuum pump will be equipped with a totally enclosed, fan cooled (TEFC) motor.

19.5.1.2 Vapor Liquid Separator (VLS)

The VLS design is based on the vacuum level and flow rate of the vacuum pump. The VLS tank will be an 80 gallon aluminum constructed tank capable of withstanding up to 28 inches of Hg vacuum, and 500cfm flow rate. The VLS unit will be installed on the vacuum side of the vapor treatment process piping directly up stream of the vacuum pump. The VLS will function to protect the vacuum pump from intaking water from the extraction wells by separating liquids from the vapor stream and containing it for proper treatment through the liquid treatment process within the treatment system.

Collected liquid in the VLS tank will be pumped out by a VLS liquid transfer pump and be discharged to the equalization tank.

Following the liquid separation process, the vapor stream will be treated through vapor GAC vessels before being discharged to the atmosphere.

19.5.1.3 Air Compressor

An air compressor will be utilized to operate the pneumatic pumps for groundwater extraction from the overburden extraction wells. Eight (8) pumps will be operating at approximately 1.81 gallons per minute (gpm) per well as determined by the feasibility testing results. An additional well of 1.81 gpm is a possibility, if VEGE-8 is deemed necessary. The compressor will be sized according to the anticipated compressed air usage to extract a 1.81 gpm flow rate from eight wells simultaneously. Based on these requirements the compressor must be a sized to handle a minimum of three (3) scfm at 40 psi. The compressor will be equipped with a TEFC motor.

19.5.1.4 Equalization Tank

An equalization (EQ) tank will be utilized to collect groundwater from all extraction wells then process the collected water through the treatment process at a more constant flow rate. The tank will be sized based on the anticipated flow rate from each extraction point and the proposed process flow rate through the treatment system. An EQ tank of approximately 300 gallons is anticipated for this system. The EQ tank will be sealed off using a gasketed lid and vented to the exterior of the building using PVC pipe. A one (1) inch vacuum line will be connected to the top of the EQ tank from the vacuum system to draw vapors from the tank to be treated in the vapor carbon.

19.5.1.5 Pneumatic Pumps

Pneumatic well pumps will be utilized in the overburden VEGE wells. Pneumatic pumps are operated by compressed air from the air compressor located within the remediation system housing. The well pumps will be sized based on the VEGE testing which indicates a 1.81 gpm extraction rate from each well.

19.5.1.6 Carbon Vessels (Vapor and Liquid Phases)

All volatile organic compound (VOC) contaminants will be treated by Granular Activated Carbon (GAC) units on the vapor and liquid stream. GAC vessels for vapor and liquid will be sized based on the anticipated flow rates and the expected contaminant concentrations in the waste streams.

GAC vessels will be monitored by pressure gauges, flow rates and the collection of samples from the influent, midfluent, and effluent of the treatment process. Along with VOC breakthrough, liquid carbon is susceptible to fouling from hardwater and bacterial growth. Increases in pressure within the treatment process will indicate carbon fouling and the need for a carbon change out. Carbon units will be plumbed in a manner that will accommodate backflushing. Collected samples will also be monitored for VOC breakthrough which will also require a carbon change.

To accommodate the 20 gpm flow rate and the anticipated TPH concentration rates, the system will utilize two (2) 1000 pound liquid GAC units rated at 100 psi. The GAC units will be installed in series. Carbon sizing calculations are included in **Appendix N**.

Vapor carbon will be monitored for VOC breakthrough and system clogging due to water condensation and freezing conditions. Vapor carbon will be changed out as needed to prevent VOC breakthrough and maintain proper vapor treatment.

The vapor carbon units will be sized to handle the minimum 275 scfm flow rate from the vacuum pump. Should the GAC units be placed on the vacuum side of the carbon vessels they must be reinforced to withstand the 13 inches of Hg vacuum produced by the vacuum pump. There will be a minimum of two 400 lb vapor GAC vessels. Carbon sizing is based on the design flow rate and the suppliers GAC unit specifications.

19.5.1.7 Transfer Pumps

A transfer pump will be installed to transfer contaminated groundwater from the EQ tank through the treatment process, including sediment filters and liquid phase GAC vessels. The pump will be sized to accommodate the flows produced by the eight (8) pneumatic groundwater pumps. Based on these design requirements the pump will be required to produce 15 gpm at 21 psi.

A transfer pump will also be required for the VLS tank to transfer groundwater extracted from the vacuum lines to the EQ tank. This pump must be a minimum of ¾ HP to overcome the vacuum produced by the vacuum system. All transfer pumps will be equipped with TEFC motors.

19.5.1.8 Sediment Filtration

Sediment filtration will be accomplished with the use of sediment bag filter units installed in parallel to accommodate the proposed system flow rate. Bag filter units will be 25 micron in filtering size.

19.5.1.9 Telemetry

The remedial system operation will be monitored using a remote telemetry system. The telemetry system will be utilized to record data regarding system operation, including backpressure of sediment filter and liquid carbon filters, and vacuum being produced by the vacuum pump. Data will be recorded on two minute intervals and saved onto an internet server where it can be accessed on any computer terminal where internet access is available. Both real time and historical data can be viewed to evaluate system performance trends.

The telemetry data will be used to maximize system operation time and efficiency, as well as to diagnose system mechanical issues. The telemetry system will also allow for remote operation of the system. This will allow individual components of the system to be started or shut down in the event of extreme pressure, vacuum, or liquid levels.

19.5.1.10 Automated Controls

The remediation system will be controlled by a Programmable Logic Control (PLC) which will receive inputs from float switches from within the equalization tank and VLS and outputs to the vacuum pump, air compressor, transfer pumps and solenoid controls. The PLC will enable the system to operate automatically and without constant oversite. All system control equipment will be housed separately from the remedial treatment streams to eliminate any potentially hazardous conditions.

20.0 REQUIRED PERMITS

20.1 Treated Water Discharge Permit

Treated groundwater will be discharged from the system by a National Pollutant Discharge Elimination System permit. The discharge will be located either to the northwest of the site, at the nearest location to the treatment system, or to the north, where the property borders an unnamed tributary of Yellow Branch, a trout stocked fishery. This is the same unnamed tributary that received discharge from the feasibility testing activities. The treated effluent will be transported to the stream via underground piping, below the frost line, approximately three (3) feet deep. The discharge location will be selected based upon permissible access to the stream and minimal erosion. A small riparian buffer will be installed to prevent erosion the stream bank at the location of the discharge.

Once the groundwater has been treated by the remediation system, the effluent must be discharged. Effluent discharge is estimated to average out at 15 gpm. Discharge from the treatment system will not be continuous. The discharge will occur when the 300 gallon EQ tank is emptied by the transfer pump.

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20.1 Treated Water Discharge Permit (Continued)

The concentration of liquid phase discharge will likely be <2 ug/l for all contaminants of concern. Monitoring of the liquid phase fluid from the midfluent of the carbon filter vessels will be used to conservatively determine when contaminant break through has occurred. The activated carbon within the primary filter will be changed before any contaminant break through can occur through the second, polishing, carbon filtration vessel. Plumbing will then be re-routed to utilize the fresh carbon as the polishing vessel.

20.2 PennDOT Right of Entry Agreement

To install the VEGE wells and horizontal boring beneath SR3019, a PennDOT Right of Entry Agreement will be required. According to PennDOT standards, any piping installed under a PennDOT roadway must be installed through horizontal or directional boring methods. Mountain Research is proposing the installation of a six (6) inch diameter directional boring for the access of the potential VEGE-8. The boring will extend from remedial trenching to the extraction point outside of the public right of way on the east side of SR3019.

The agreement will require construction details and permit forms to be prepared and submitted to PennDOT for approval. The agreement with PennDOT will grant the right to Mountain Research to install the VEGE well and continue to access the well until the well is abandoned. This agreement will be pursued upon determining the necessity of VEGE-9.

20.3 Electrical Compliance

All electrical connections for remedial system components will be made pursuant to applicable electrical codes. The shed will be wired to comply with OSHA Class 1, Division 2 Hazardous Location standards.

20.4 Vapor Discharge

Treated discharges of air from vapor extraction will be discharged to the atmosphere. Based on the type of contaminants, minimal volume, and flow to be expected, PADEP air permitting will not be required. Effluent vapor discharge is expected to be in the range of 300 acfm.

21.0 PLANNED ACTIVITIES AND SCHEDULE

21.1 System Operational Timeframe

It is estimated / assumed that the VEGE treatment system will operate continuously at the site for a period of two (2) years (8 quarters). During remedial operation the site and system will be continually evaluated by Mountain Research, PADEP, and the Underground Storage Indemnification Fund (USTIF), to determine the project status and objective of demonstrating the elimination of current / future exposure contaminant migration pathways to the down gradient areas.

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21.1 System Operational Timeframe (Continued)

If stable / decreasing trends are identified prior to the completion of 8 quarters of operation, Mountain Research, PADEP and USTIF may choose to discontinue operation of the system early and begin attainment sampling.

The system will remain in operation until the PADEP case manager approves of the reduction in contaminant levels. The site contamination is not required to be reduced to the SHS.

21.2 System Checks / Sampling / Reporting

VEGE treatment system checks will be executed by Mountain Research on a bi-weekly basis (twice per month). System checks will include a detailed evaluation of system components, regular maintenance on system equipment, monitoring and sampling of extracted groundwater via influent, midfluent, and effluent sampling ports; and PID monitoring of extracted vapors. Aqueous samples obtained from influent, midfluent, and effluent sampling ports will be obtained by Mountain Research field staff, placed on ice and transported to the PADEP accredited Mountain Research laboratory. All samples will be analyzed for the new PADEP shortlist of unleaded petroleum parameters via EPA method 8260B. Regularly scheduled / necessary carbon changes will occur during or as a result of regular system checks and any necessary backflushing of carbon units / system components will be carried out. Total discharge volumes will be recorded from totalizing flow meters, and particulate filters will be checked and changed on an as-needed basis. Telemetry components will be examined during system checks. Specialized system checks will be performed at any time when system telemetry indicates irregular function and / or system failure / shut downs.

Effluent sampling parameters will be determined by the associated NPDES permit requirements. These requirements will be monitored and sampling results and flow measurements will be provided to the PADEP as required. Remedial system check data including total discharge volume and analytical results will also be included in quarterly reports to PADEP.

Prior to remediation start up, all wells (monitoring and extraction) will be sampled to establish a pre-remediation baseline of site conditions. Thereafter, the groundwater will be monitored on a quarterly basis from monitoring wells: MW-1, MW-1D, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12, Inside Well, Outside Well, and the Cessna Well. The quarterly groundwater monitoring and sampling activities will be performed in accordance with current PADEP protocol. Depth-to-groundwater measurements will be recorded from all wells during each sampling episode. This data will be used to calculate groundwater capture and gradient.

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21.2 System Checks / Sampling / Reporting (Continued)

In accordance with the PADEP's *Groundwater Monitoring Guidance Manual*, each monitoring well will be purged to remove stagnant groundwater from the well casing and filter pack. A minimum of three well volumes will be purged from each monitoring well prior to sampling. Field measurements consisting of pH, specific conductance, and temperature readings will be collected during purging and sampling of the wells. Each monitoring well will be purged using dedicated, properly decontaminated sampling equipment.

All obtained samples will be measured in the field for pH, temperature, and specific conductance prior to being placed on ice and transported to the PADEP accredited laboratory at Mountain Research's corporate office following all proper chain of custody protocol. The groundwater samples and system samples will be analyzed for the presence of benzene, toluene, ethylbenzene, cumene, total xylenes, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB via EPA method 8260B.

Based on the quarterly contaminant concentrations and the observed groundwater levels, a Remedial Action Progress Report (RAPR) shall be completed and concisely organized and shall contain the following elements:

- A summary of remedial progress made during the reporting period, including contaminant reductions and to address whether or not the reductions will achieve a timely and cost-effective site closure.
- Tabulated data collected from the monitored wells documenting the depth to groundwater and thickness of any free product encountered.
- At least one groundwater elevation contour map depicting groundwater flow direction.
- Tabulated historical quantitative groundwater analytical results including results from the current quarter.
- Current quarter laboratory analytical report(s);
  One site-wide isoconcentration contour map for each compound detected in any one well above the aqueous SHS during the quarter.
- For each well that has exhibited an aqueous SHS exceedance during the reporting period, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations. This assessment should specifically address whether or not observed dissolved-phase constituent concentration fluctuations may be related to changing hydrogeologic conditions or whether these fluctuations may be potentially indicative of changed conditions requiring further investigation and/or a possible change in the site closure strategy.
- For each well exceeding aqueous SHS, a graphical depiction of recent key contaminant concentration trends. Each quarter, contaminant concentration trendlines shall be calculated using the previous two-years of analytical data (or data collected after the active remediation has been initiated) to be plotted on an x-y scatter plot with a semi-logarithmic scale. The exponential trendlines shall be projected forward in time to assess the pace of remediation towards attainment of the selected remediation standard(s).

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21.2 System Checks / Sampling / Reporting (Continued)

- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, shrinking, or expanding plume.
- Demonstration that required Federal, State, and local permits and approvals are being complied with.
- System operation and maintenance activities, including telemetry data to demonstrate system operation percentage for the given quarter of monitoring and total volume of groundwater treated per quarter.
- Analytical results for samples obtained from system checks.
- RAPRs will be signed and sealed by a Professional Geologist registered in the Commonwealth of Pennsylvania.

The system will operate continuously for a period of two (2) years, or until stable / decreasing contaminant trends are observed, whereupon Mountain Research, PADEP, and the Underground Storage Indemnification Fund (USTIF) staff will re-evaluate the system / project status and pursue either site closure or alternative strategies for the site. After two (2) years (8 quarters) of remedial system operation, or upon earlier system deactivation, quarterly groundwater monitoring and reporting will continue for a period of at least one (1) year (4 quarters) prior to the submittal of a Remedial Action Completion Report (RACR) to PADEP for review and approval of site closure.

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REFERENCES

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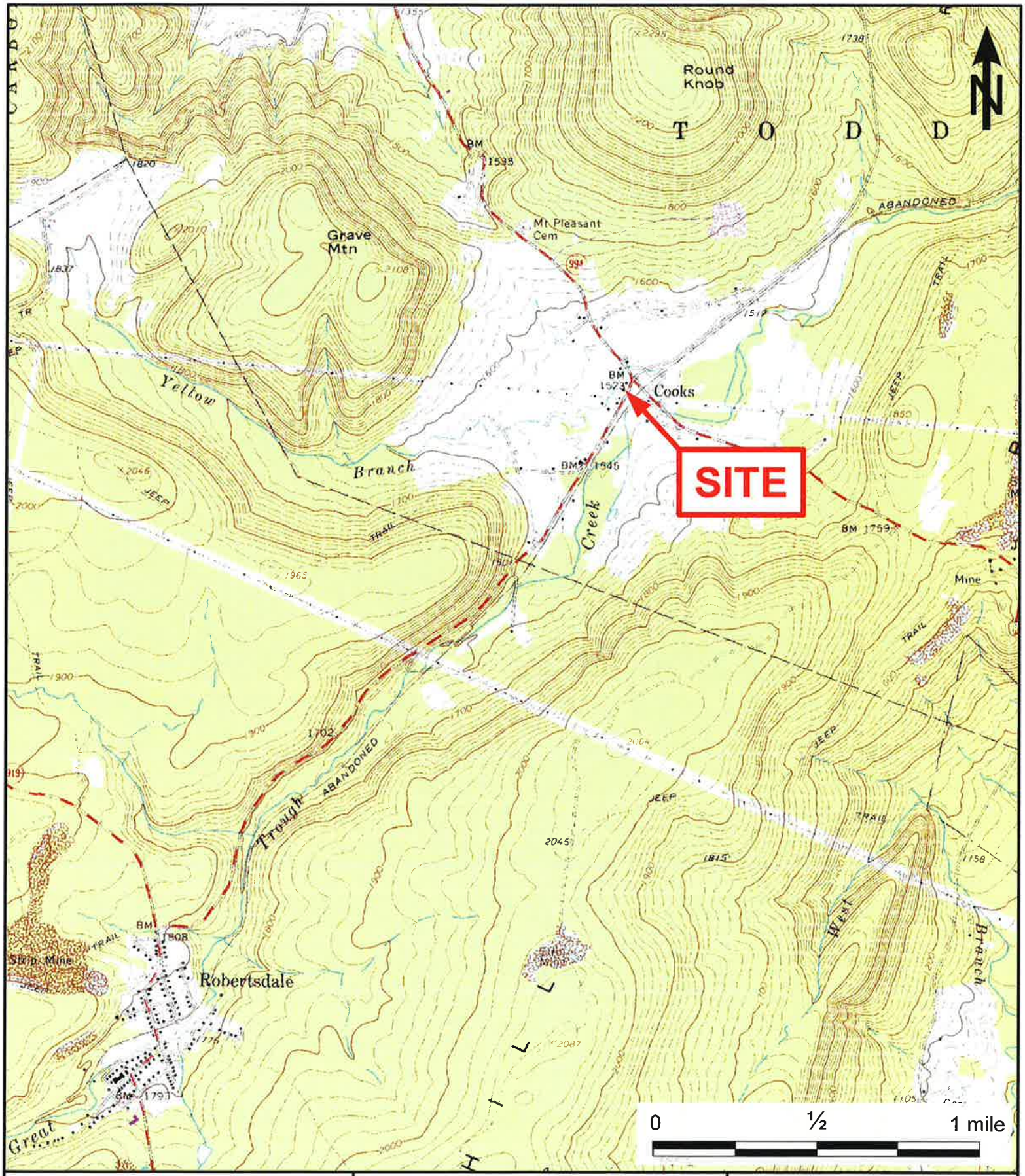
FIGURES



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N40.211490° W78.088350°
Saltillo, PA 7.5 Minute Topographical Quadrangle

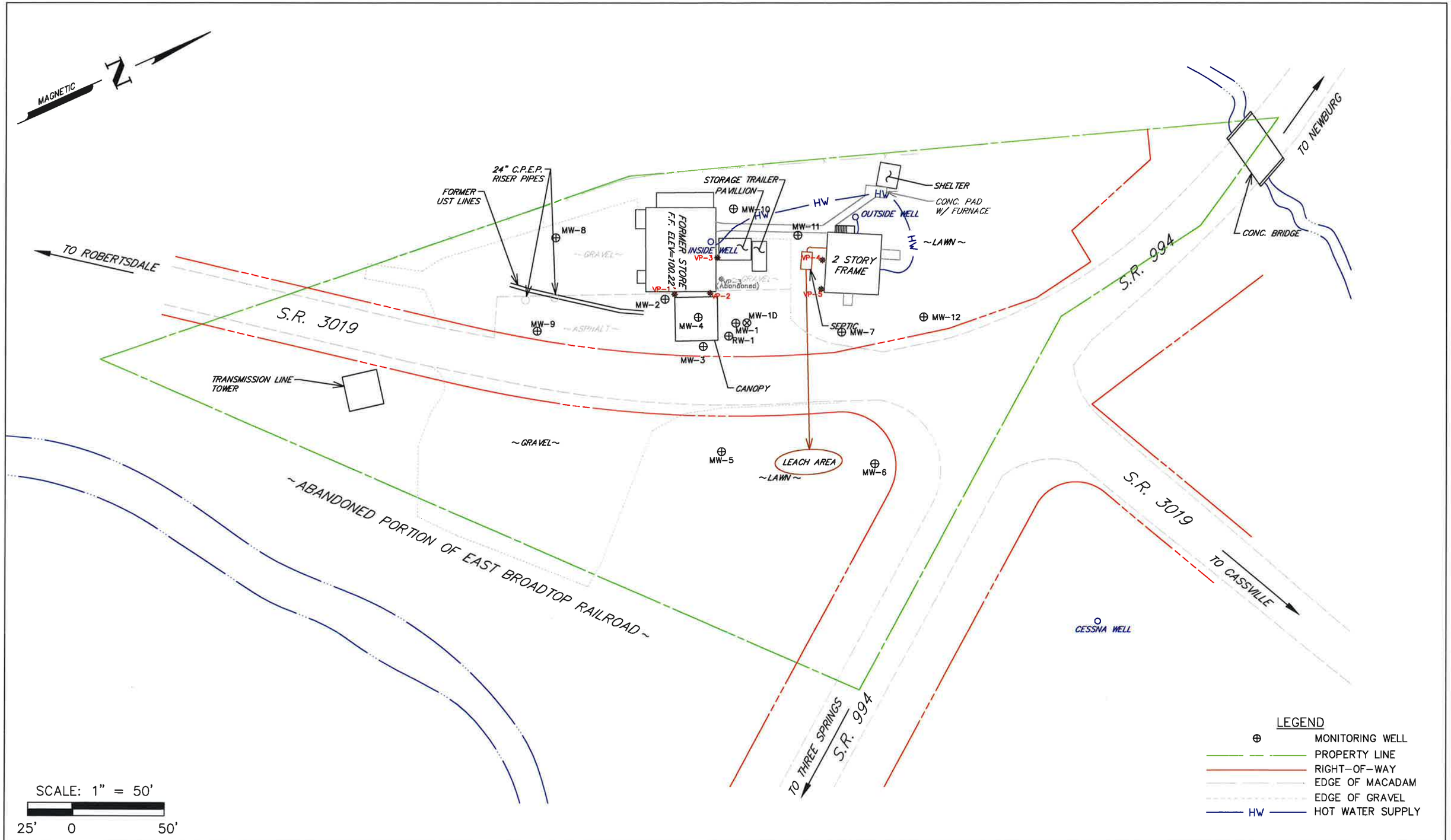
Drawn By: MTF Checked By: MRC Date: 1-16-15

H:\C\Cooks Country Store\4547.15.01.50 Robertsdale, PA\MISC

Cooks Country Store
21042 Cooks Road
Todd Township (Robertsdale),
Huntingdon County, PA

SITE LOCATION MAP

Figure 1



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Project Manager: M.C.
Checked By: MRC

4547.15.01

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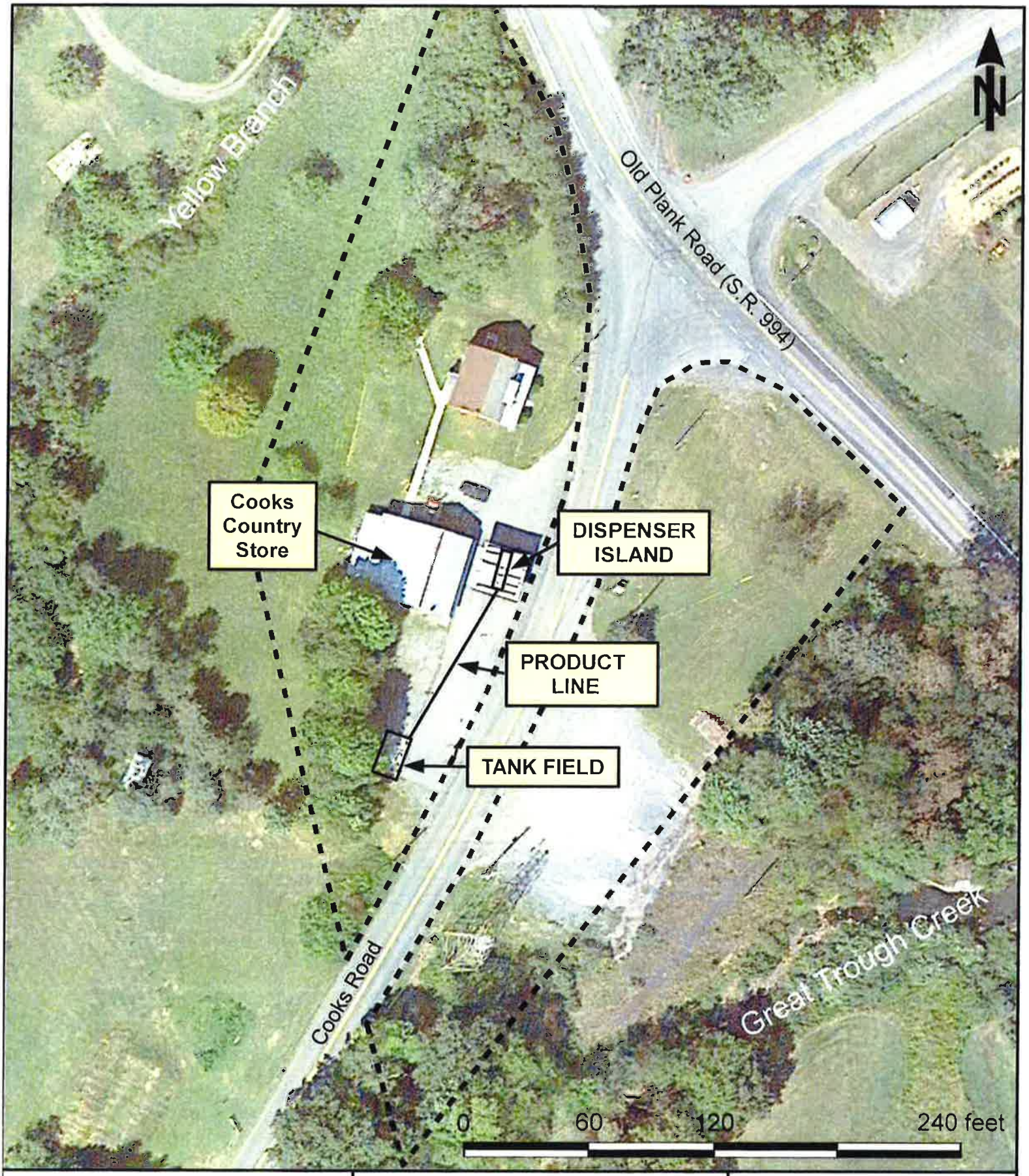
COOK'S COUNTY STORE
21042 Cooks Road
Robertsdale, PA

SITE MAP
Figure 2



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Approximate Property Boundary

Gasoline Dispensers, Piping & USTs

Image © Google, 2012

Drawn By: MTF Checked By: MRC Date: 2-24-15
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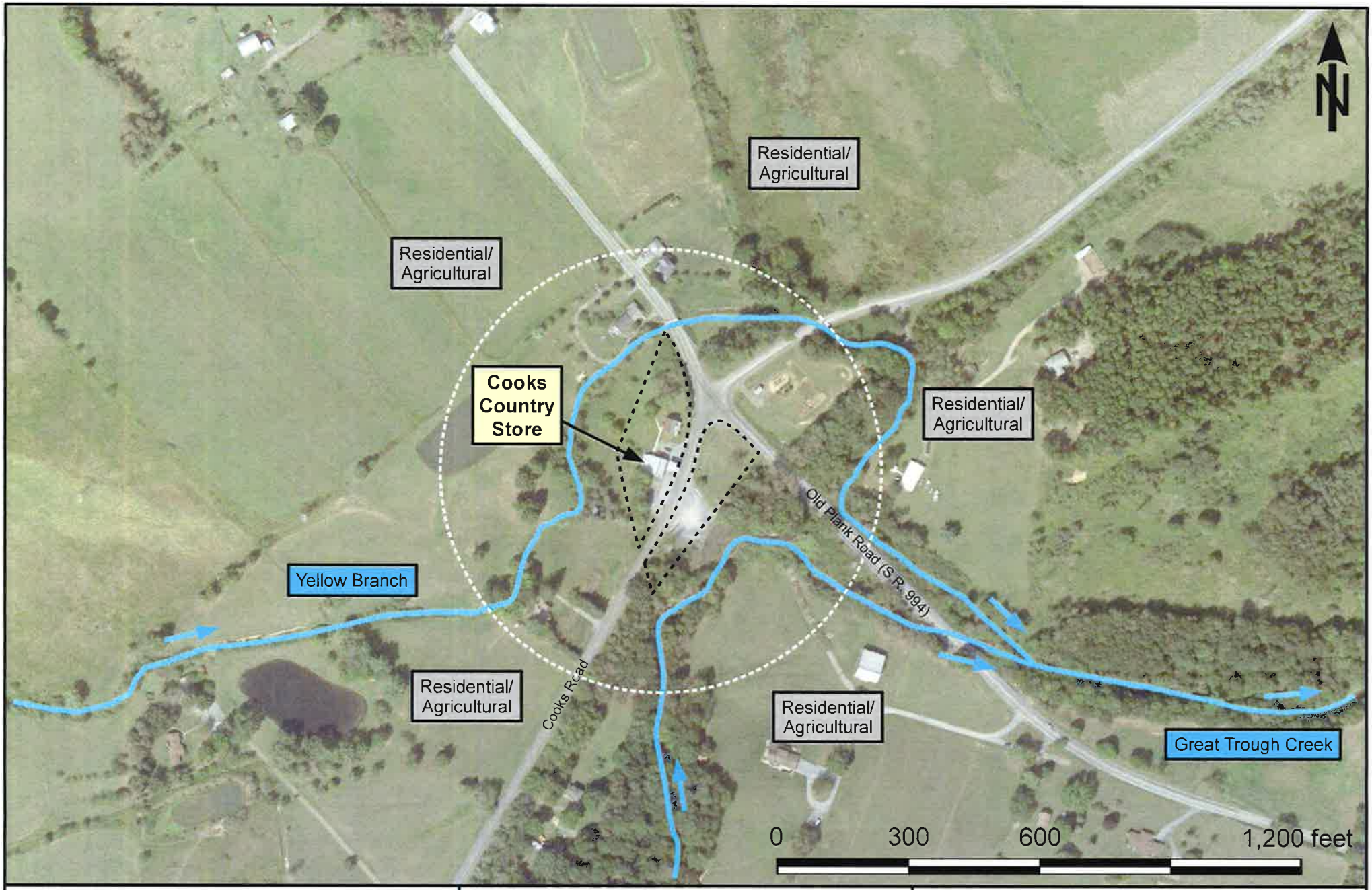
Cooks Country Store
21042 Cooks Road
Todd Township (Robertsdale),
Huntingdon County, PA

SITE AERIAL MAP

Figure 3



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Approximate Property Boundary

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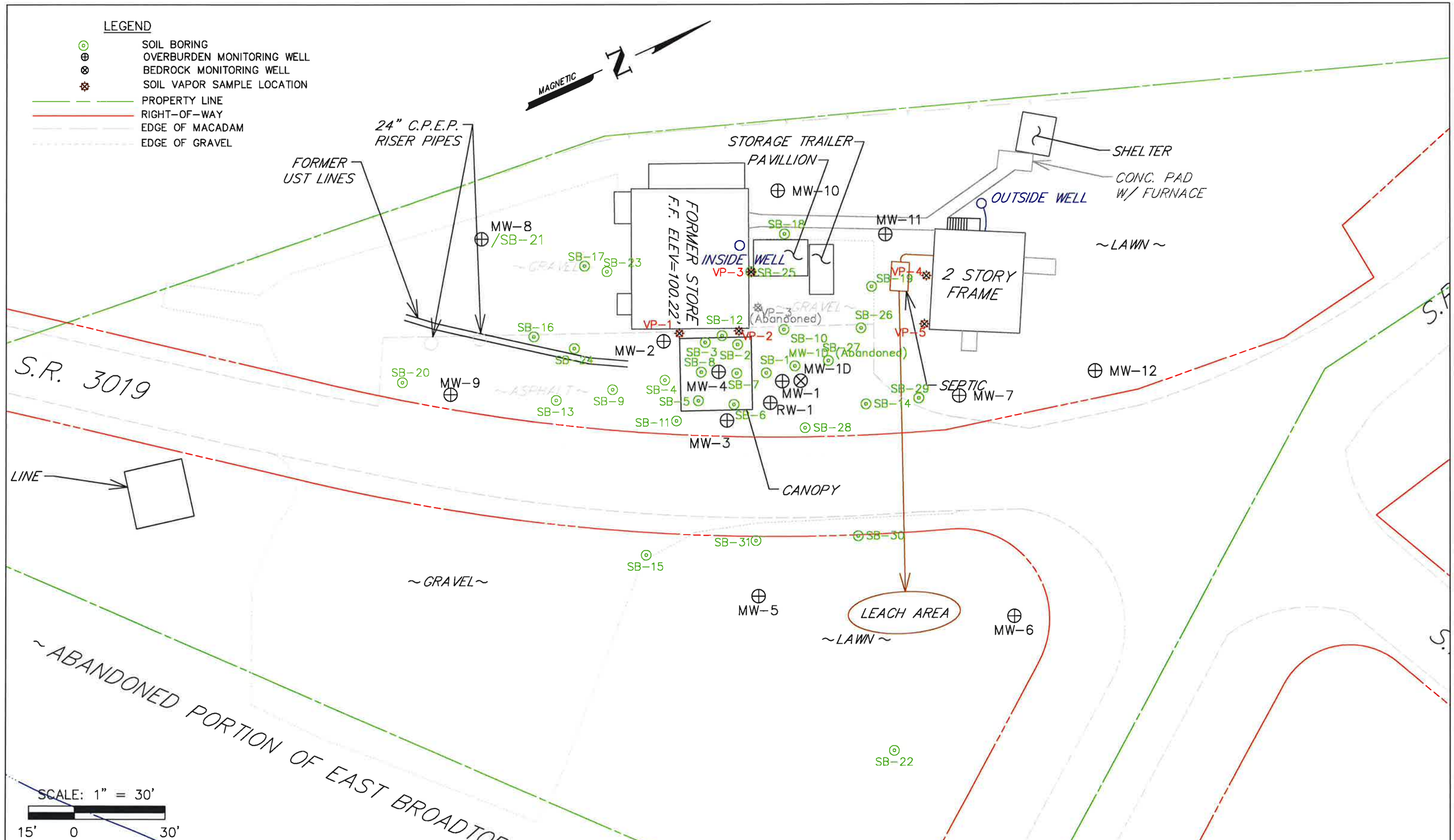
Todd Township (Robertsdale),
Huntingdon County, PA

WIDE SITE AERIAL MAP – 1,000 FOOT RADIUS

Figure 4



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COOKS COUNTY STORE
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Robertsdale, PA

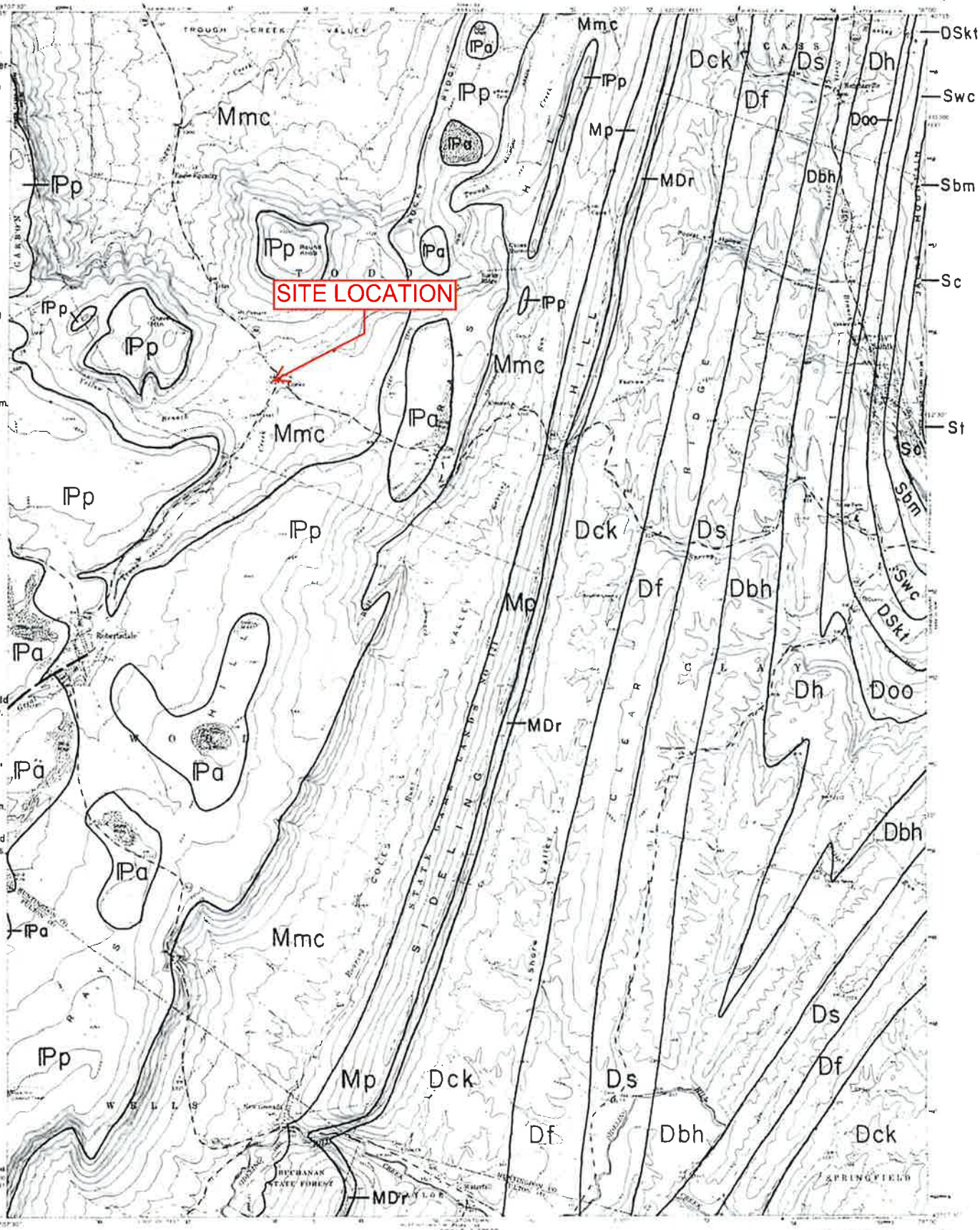
SOIL BORING LOCATION MAP
Figure 5

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SALTILLO QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

SOURCE
(1) Pa Third Geol Survey Rept. IO.
(2) Aerial photo interpretation and reconnaissance field check by Hoskins.

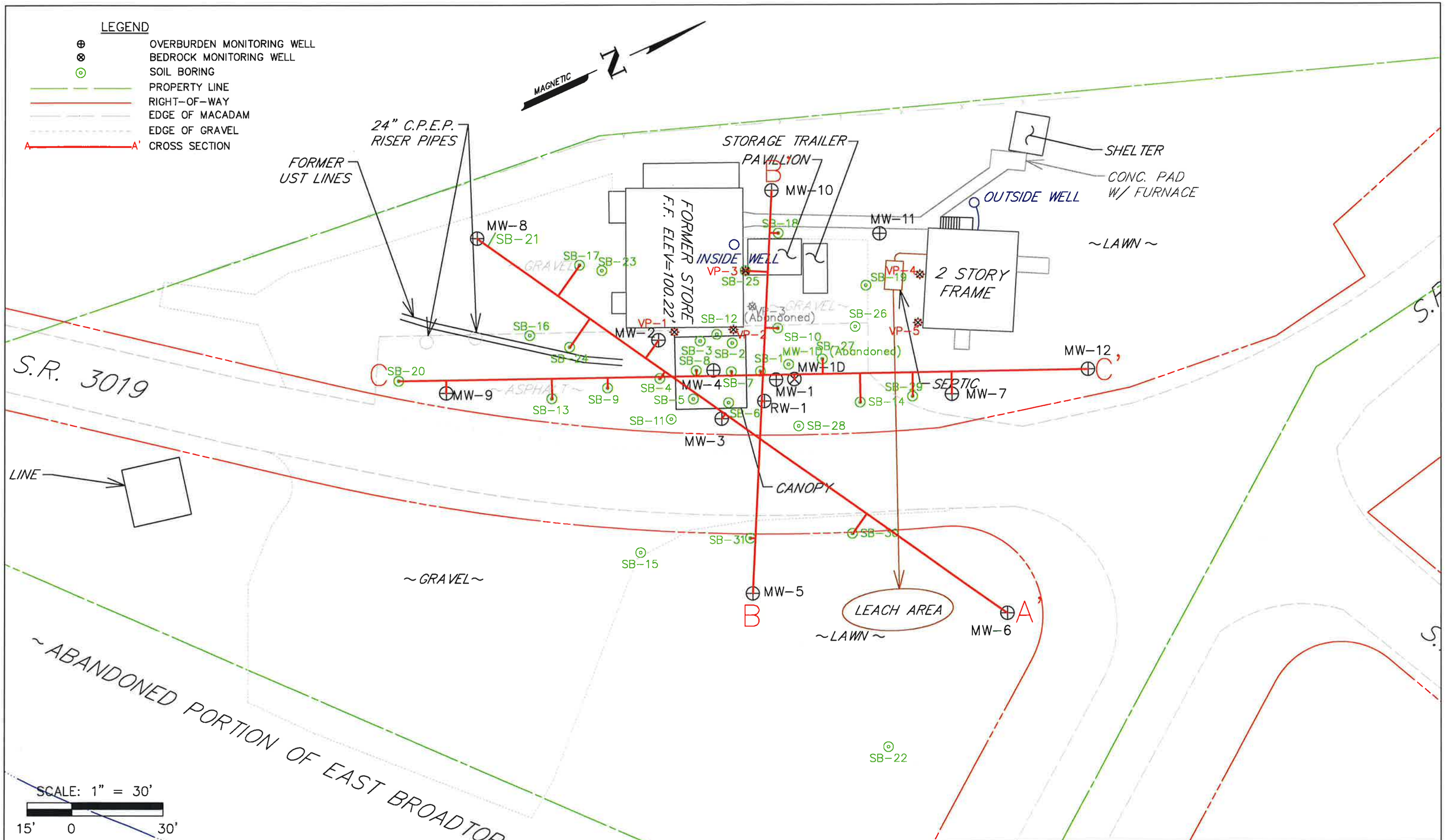
EXPLANATION
Pa Allegheny Gp.
Pp Pottsville Gp.
Mmc Mauch Chunk Fm.
Mp Pocono Fm.
MDr Rockwell Fm.
Dck Catskill Fm.
Df Foreknobs Fm.
Ds Scherr Fm.
Dbh Brallier and Harrell Fms., undiv.
Dh Hamilton Gp.
Doo Onondaga and Old Port Fms., undiv.
DSkt Keyser and Tonoloway Fms., undiv.
Swc Wills Creek Fm.
Sbm Bloomsburg and Mifflintown Fms. undiv.
Sc Clinton Gp.
St Tuscarora Fm.



REFERENCE
Gardner, J. H. (1913), The Broad-Top coal field of Huntingdon, Bedford and Fulton Counties, Pennsylvania Geological Survey, 3rd ser., Economic Report 10, 81 p.

Compiled by D. M. HOSKINS, 1976

SALTILLO
FIGURE 6



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COOKS COUNTY STORE
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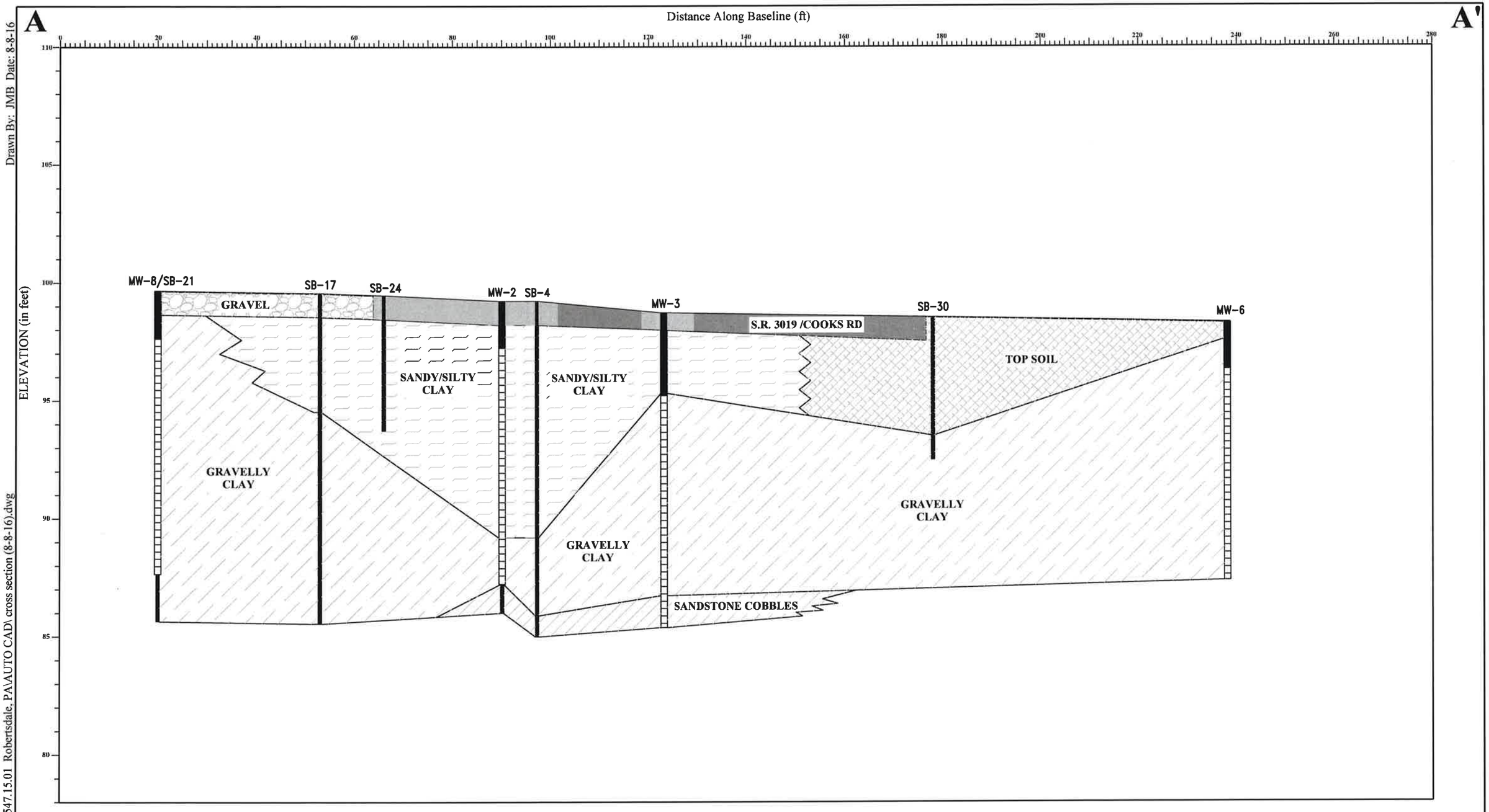
Robertsdale, PA

CROSS SECTION LOCATION MAP
Figure 7



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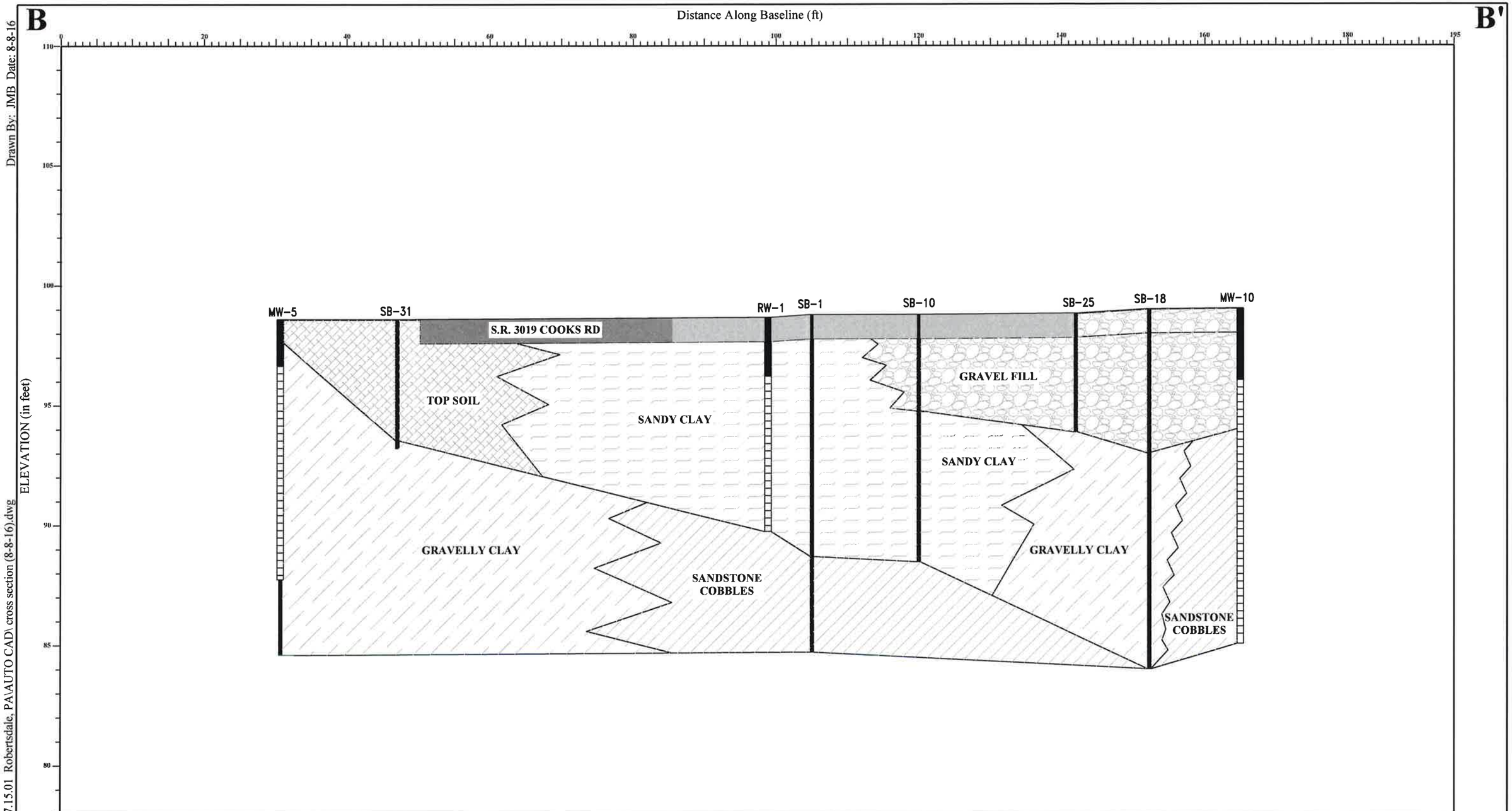
LEGEND

- Concrete
- Gravelly Clay
- Sandy Silty Clay
- Sandstone Cobbles
- Asphalt
- Top Soil
- Gravel
- Underground Utility

COOKS COUNTY STORE

21042 Cooks Road
Robertsdale, PA

CROSS SECTION MAP
A-A'
Figure 8



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LEGEND

- Concrete
- Asphalt
- Gravelly Clay
- Top Soil
- Sandy Clay
- Gravel Fill
- Sandstone Cobbles

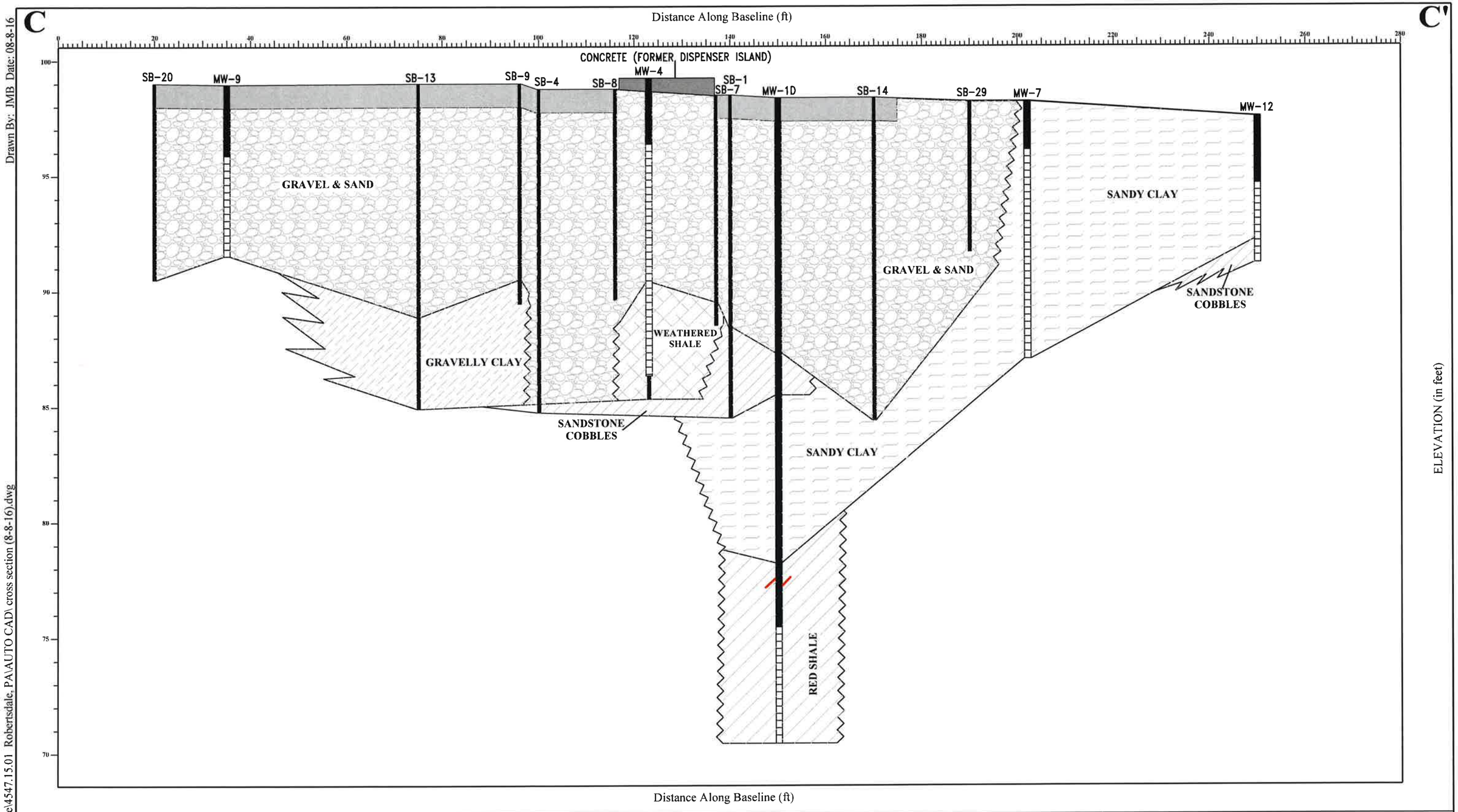
Underground Utility

APPROX DEPTH (IN FEET)
BGS
GS

COOKS COUNTY STORE

21042 Cooks Road
Robertsdale, PA

CROSS SECTION MAP
B-B'
Figure 9



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LEGEND

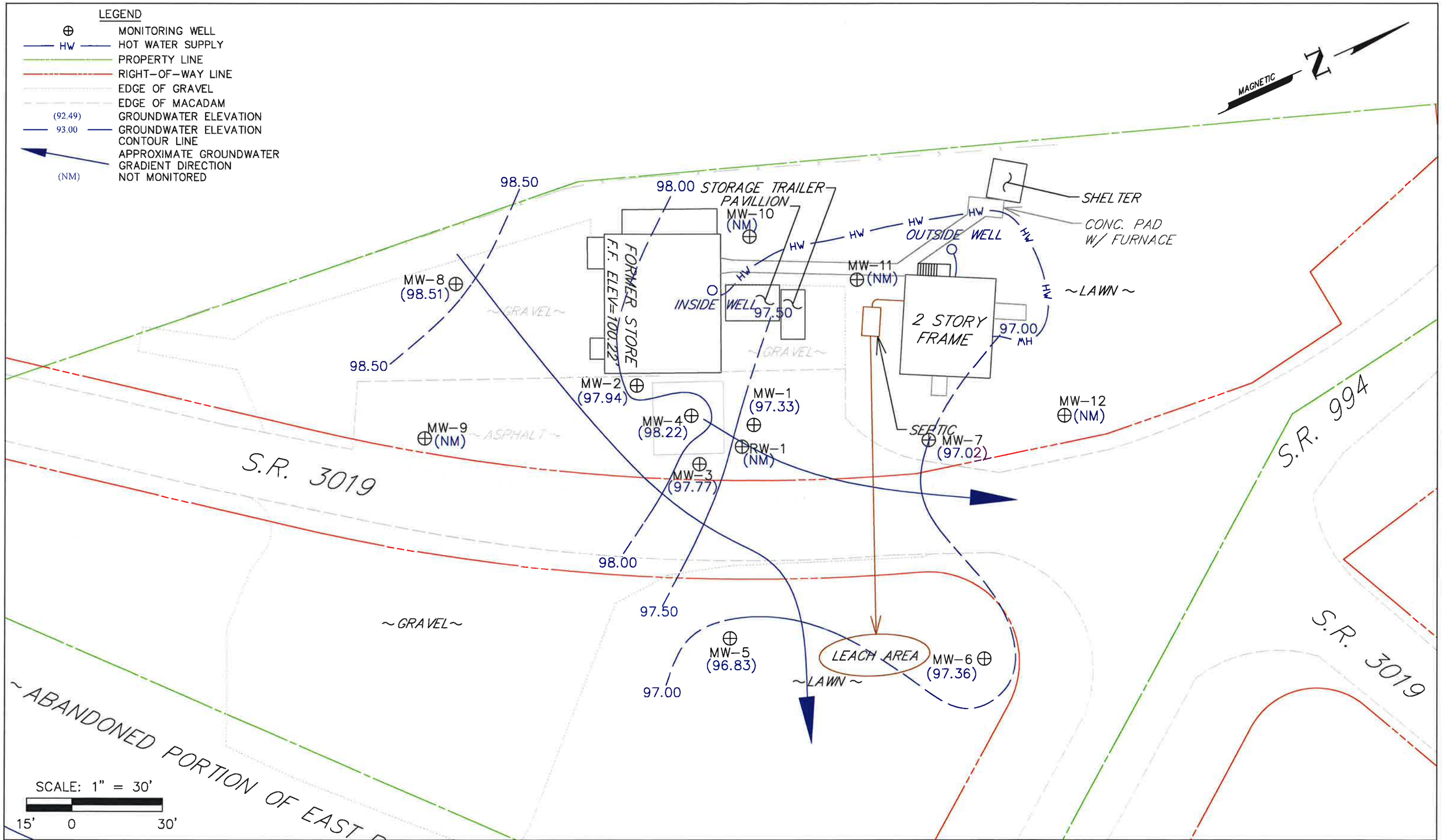
- Concrete
- Gravelly Clay
- Sandy Clay
- Sandstone Cobbles
- Asphalt
- Weathered Shale
- Red Shale
- Gravel & Sand
- Fracture Line
- Underground Utility

COOKS COUNTY STORE

21042 Cooks Road
Robertsdale, PA

CROSS SECTION MAP
C-C'

Figure 10



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COOKS COUNTY STORE
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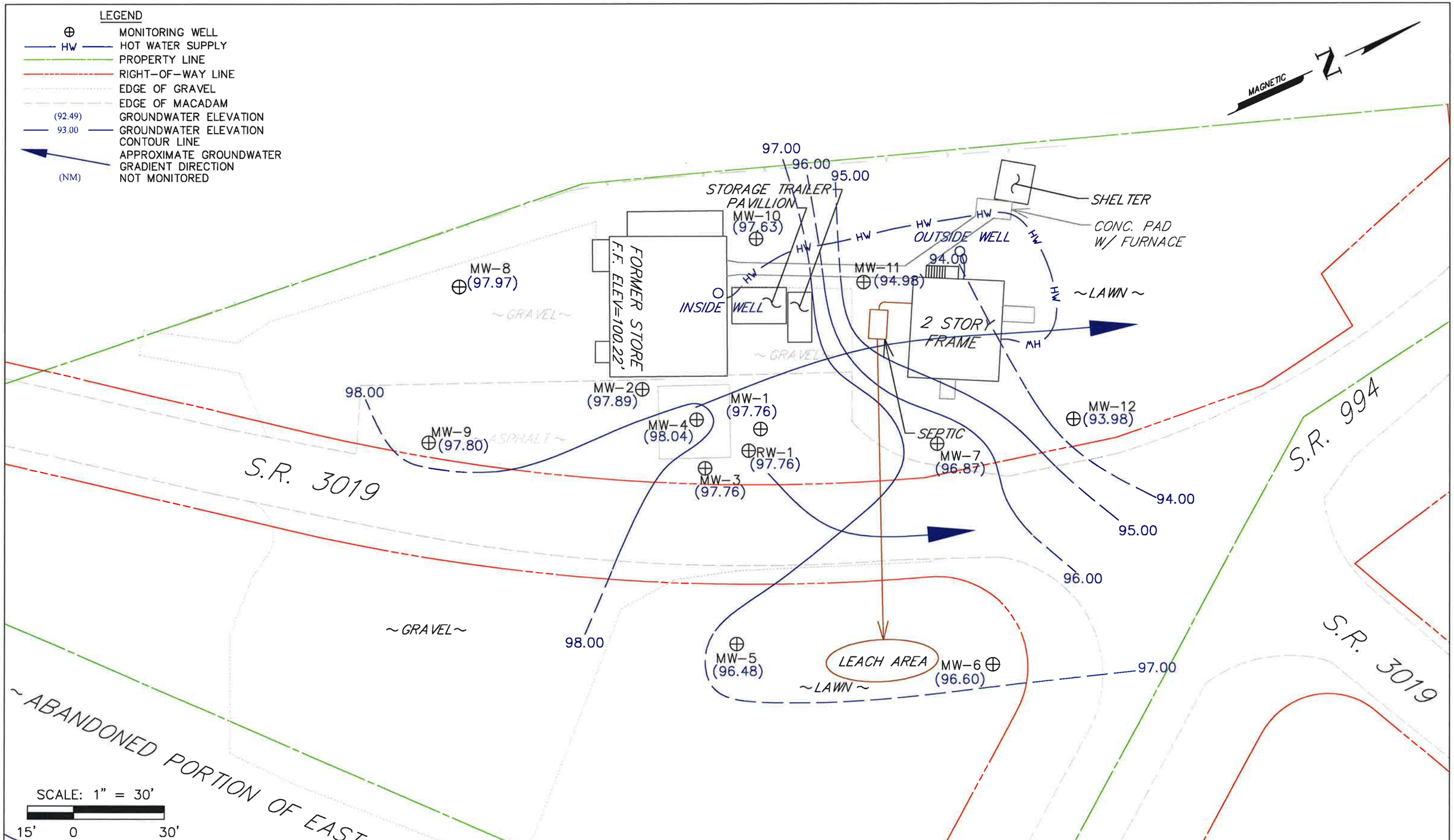
Robertsdale, PA
GROUNDWATER ELEVATION CONTOUR MAP

February 2, 2016
Figure 11



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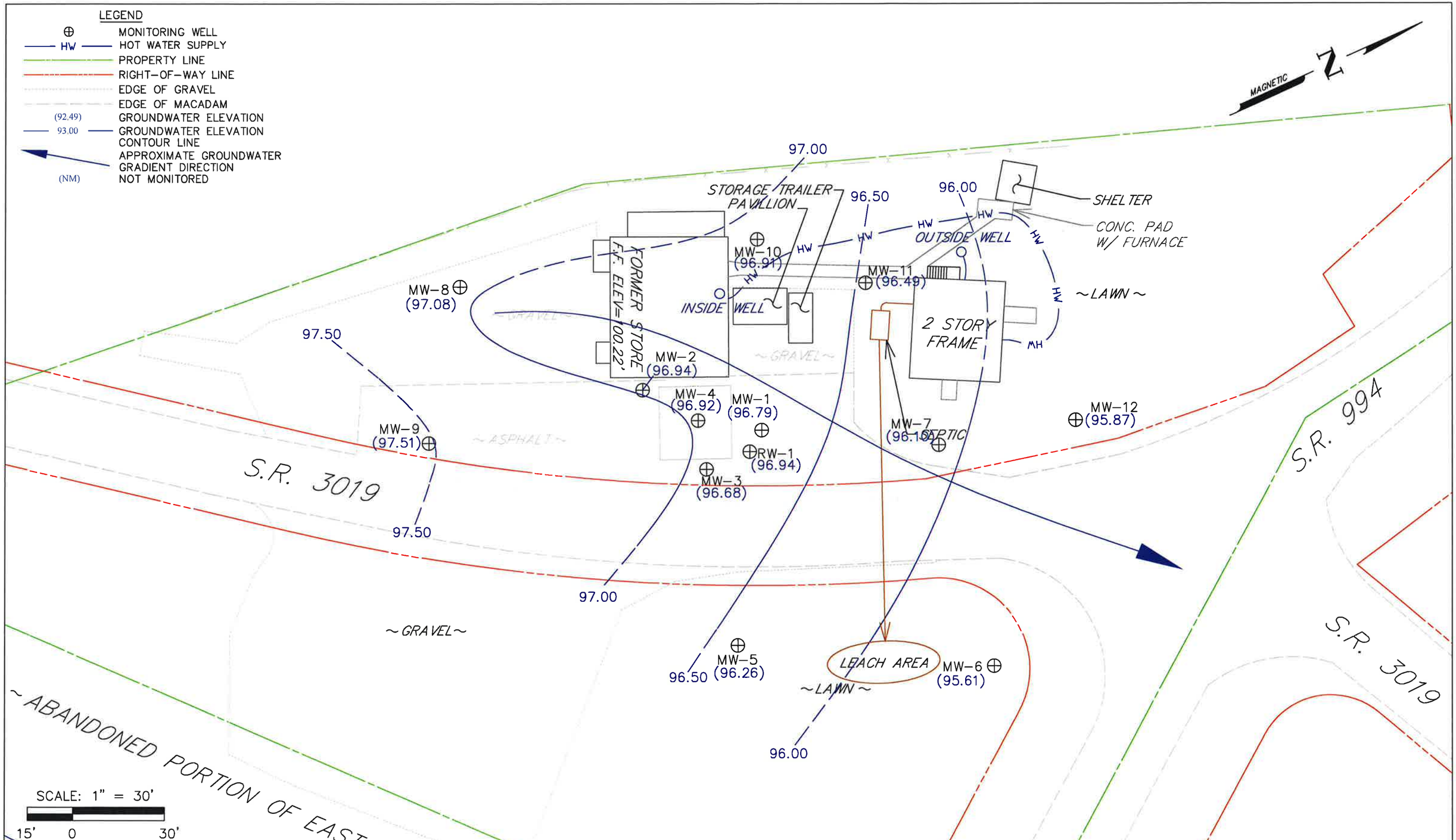
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA
GROUNDWATER ELEVATION CONTOUR MAP

May 10, 2016
Figure 12



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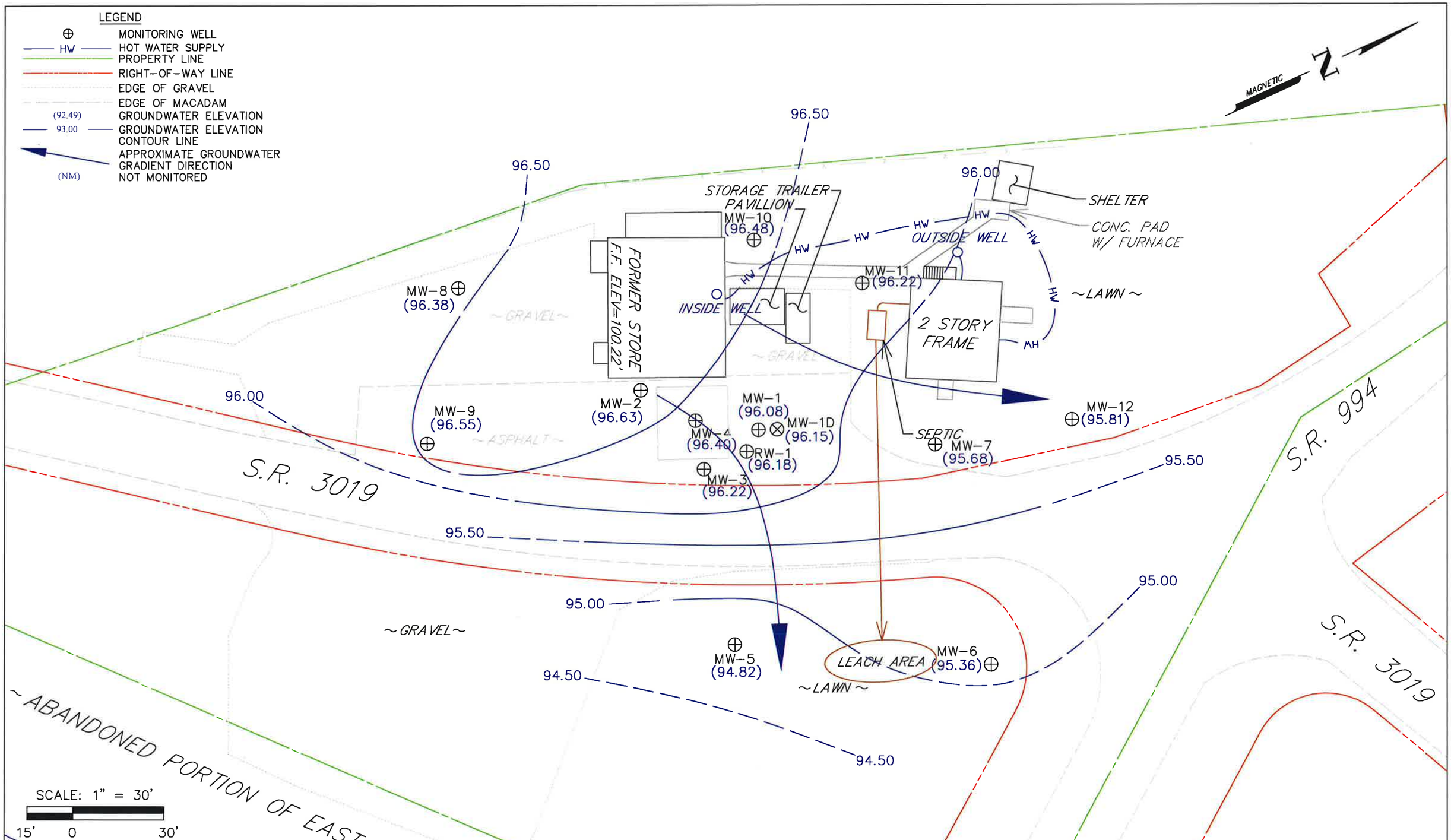
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA
GROUNDWATER ELEVATION CONTOUR MAP

June 13, 2016
Figure 13



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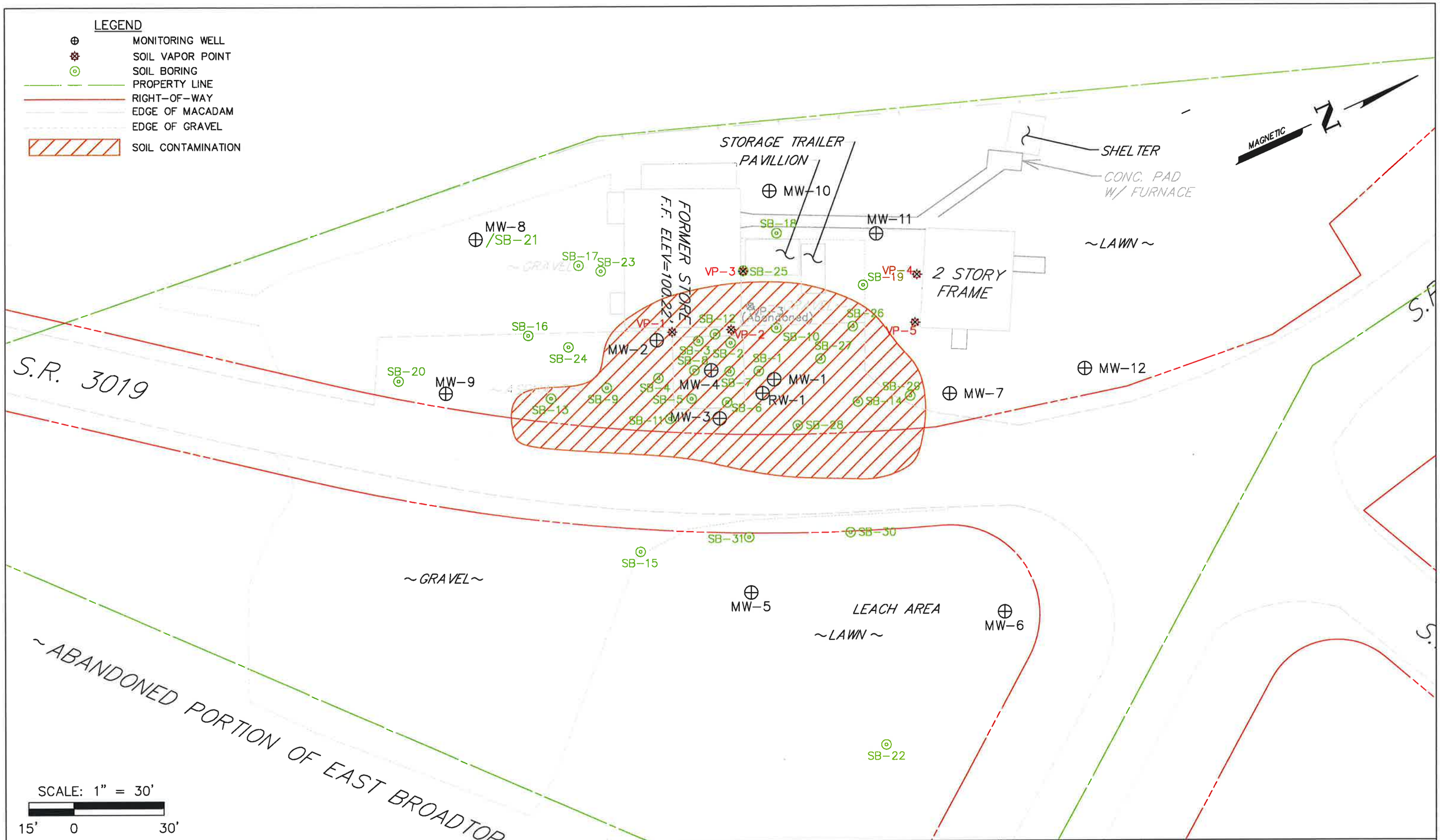
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA
GROUNDWATER ELEVATION CONTOUR MAP

August 3, 2016
Figure 14



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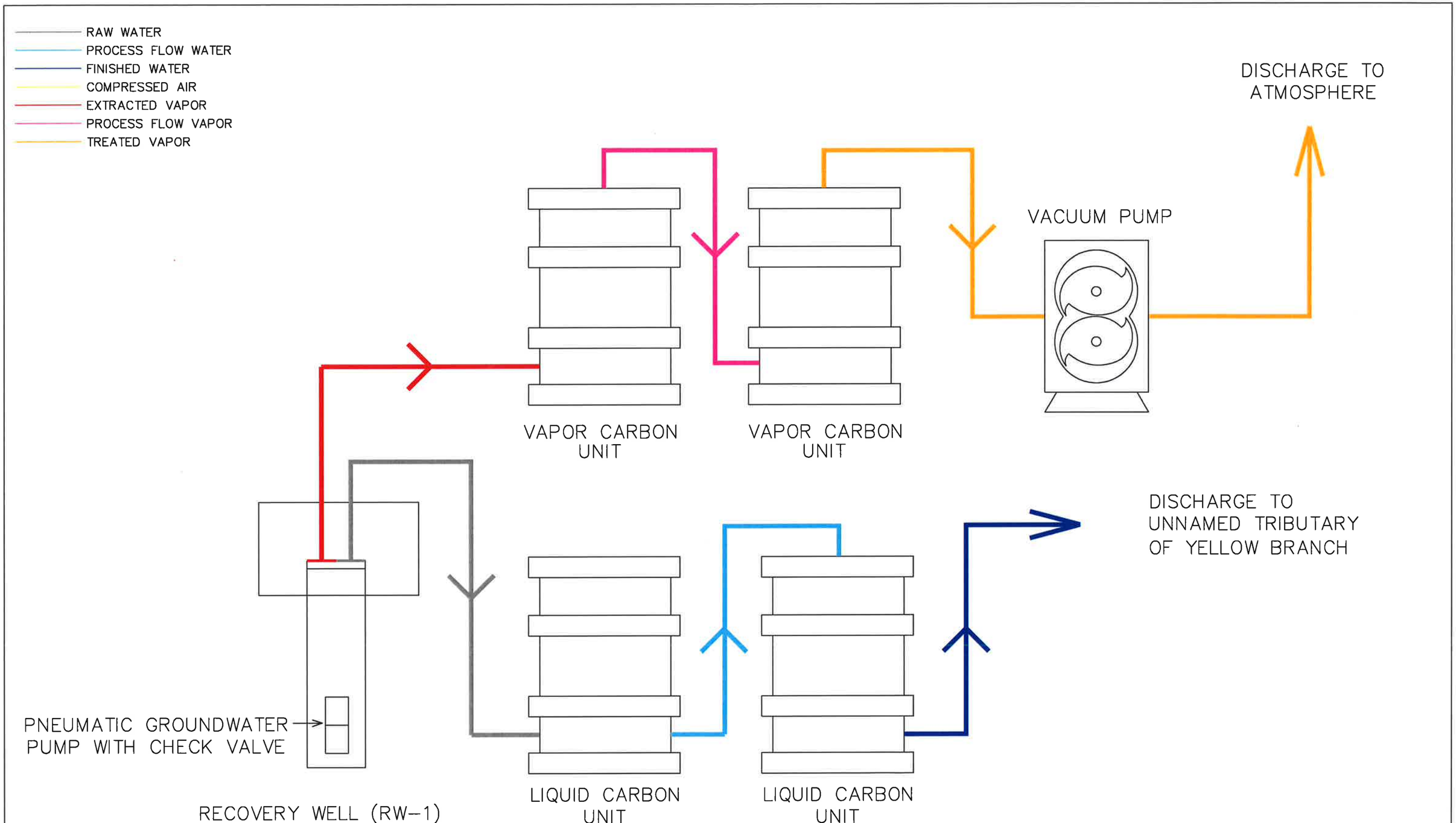
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

UNSATURATED SOIL IMPACTS
Figure 15



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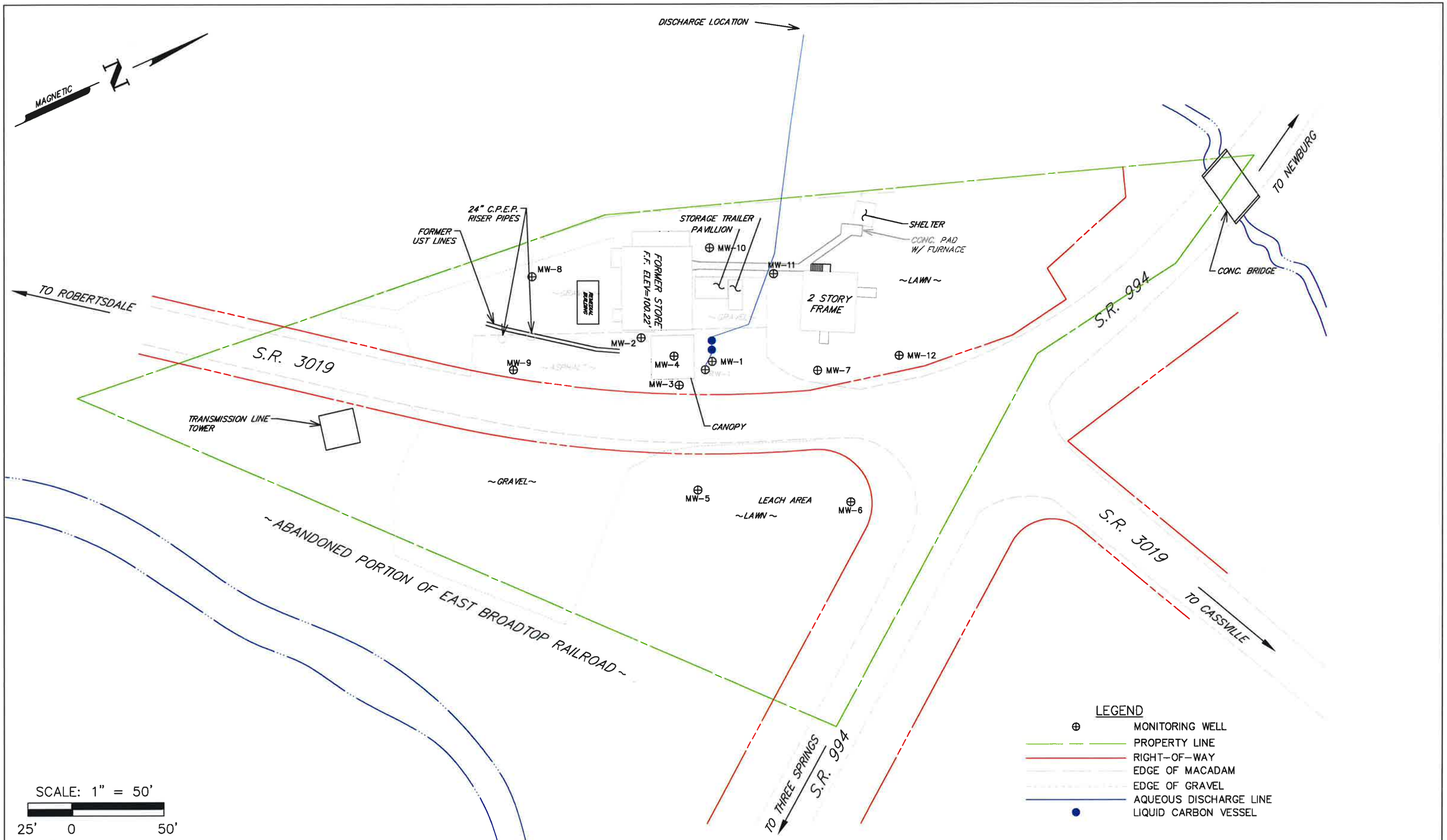
Process Flow Diagram.dwg

COOKS COUNTRY STORE
21042 Cooks Road
Robertsdale, Huntingdon County, PA
FEASIBILITY TESTING PROCESS FLOW DIAGRAM
Figure 16



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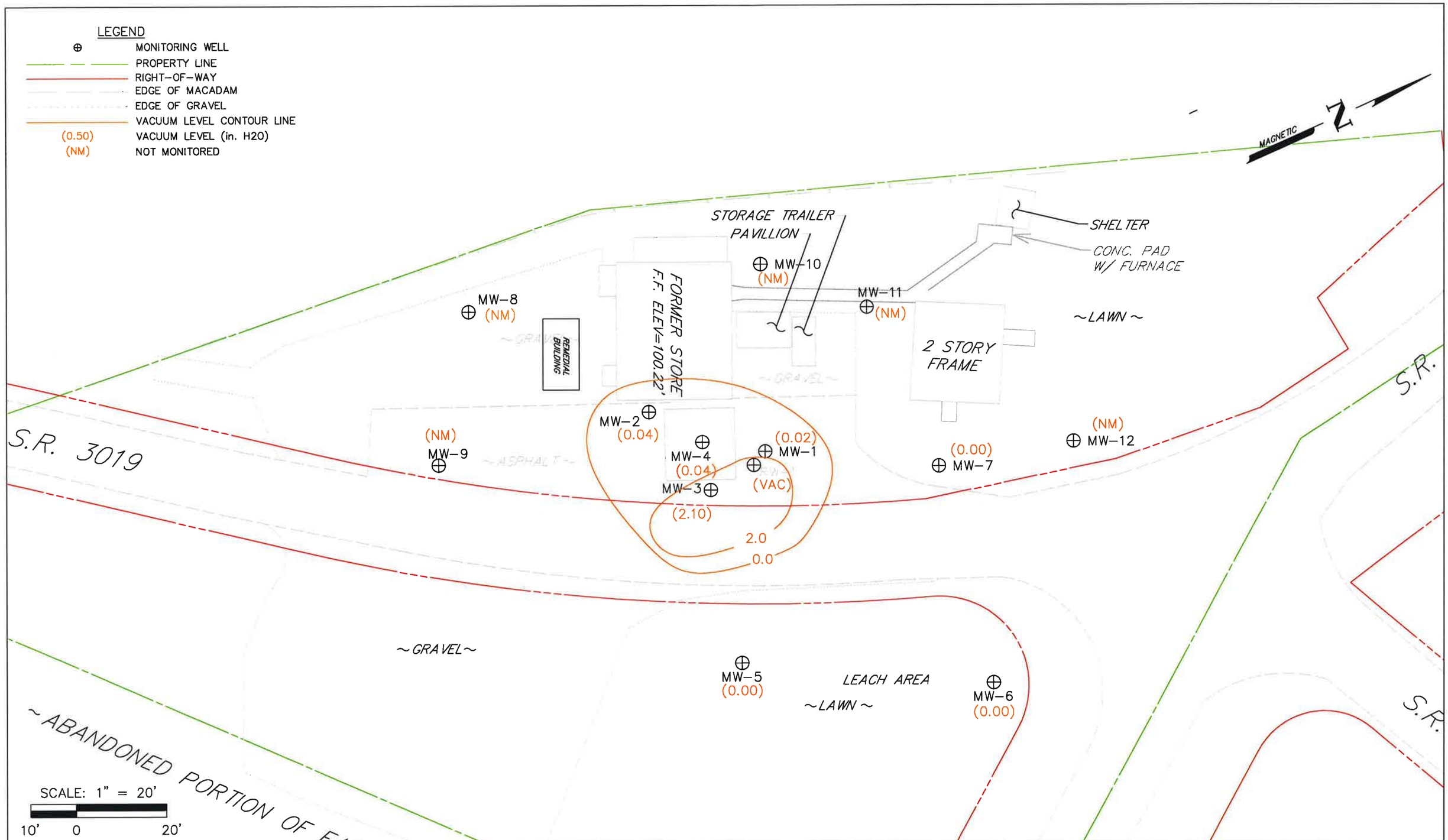
COOKS COUNTY STORE
Robertsdale, PA

FEASIBILITY TESTING DISCHARGE LOCATION
Figure 17



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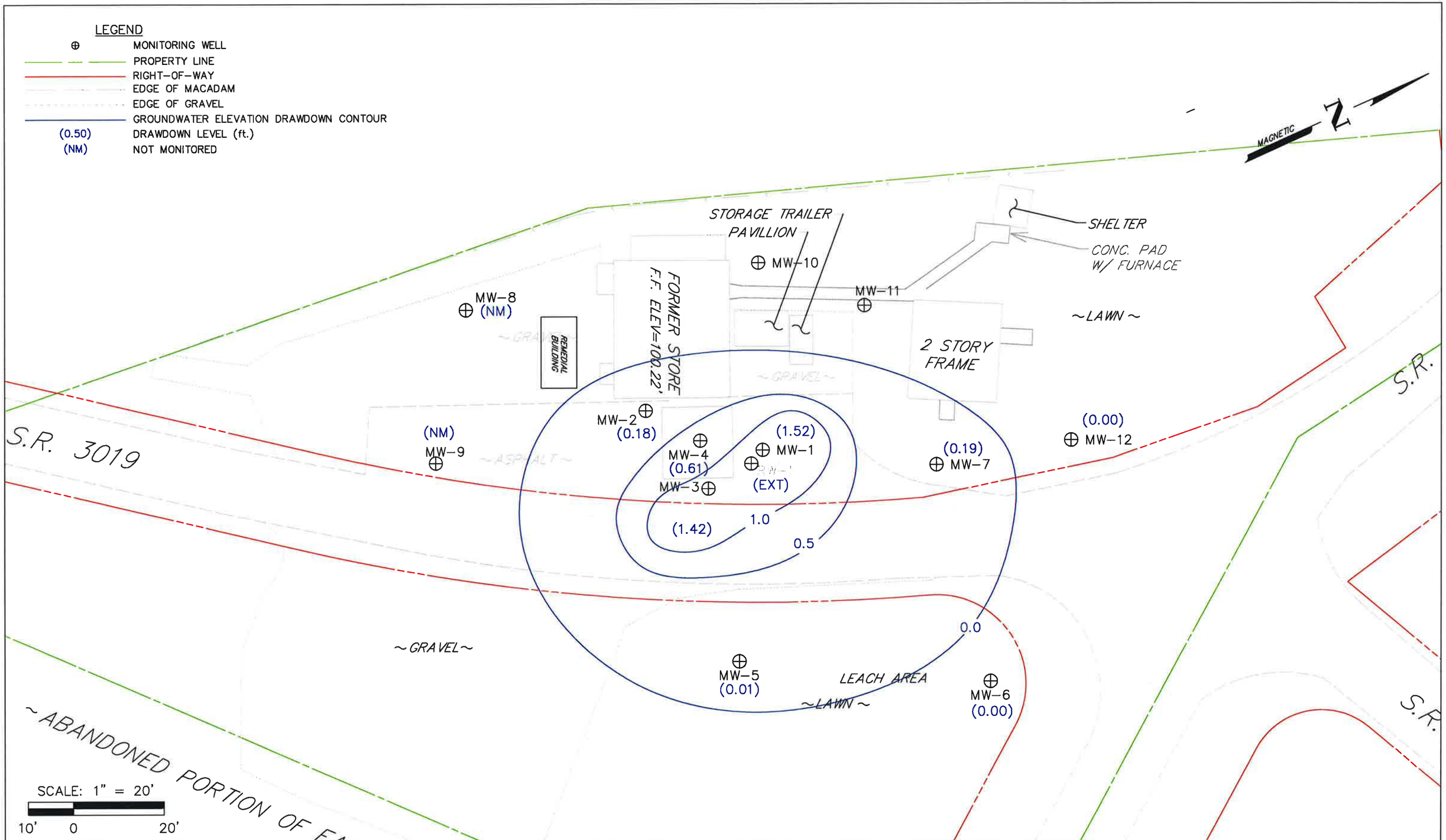
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

HIGH VACUUM INFLUENCE - JUNE 29, 2016
Figure 18



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Checked By: MRC

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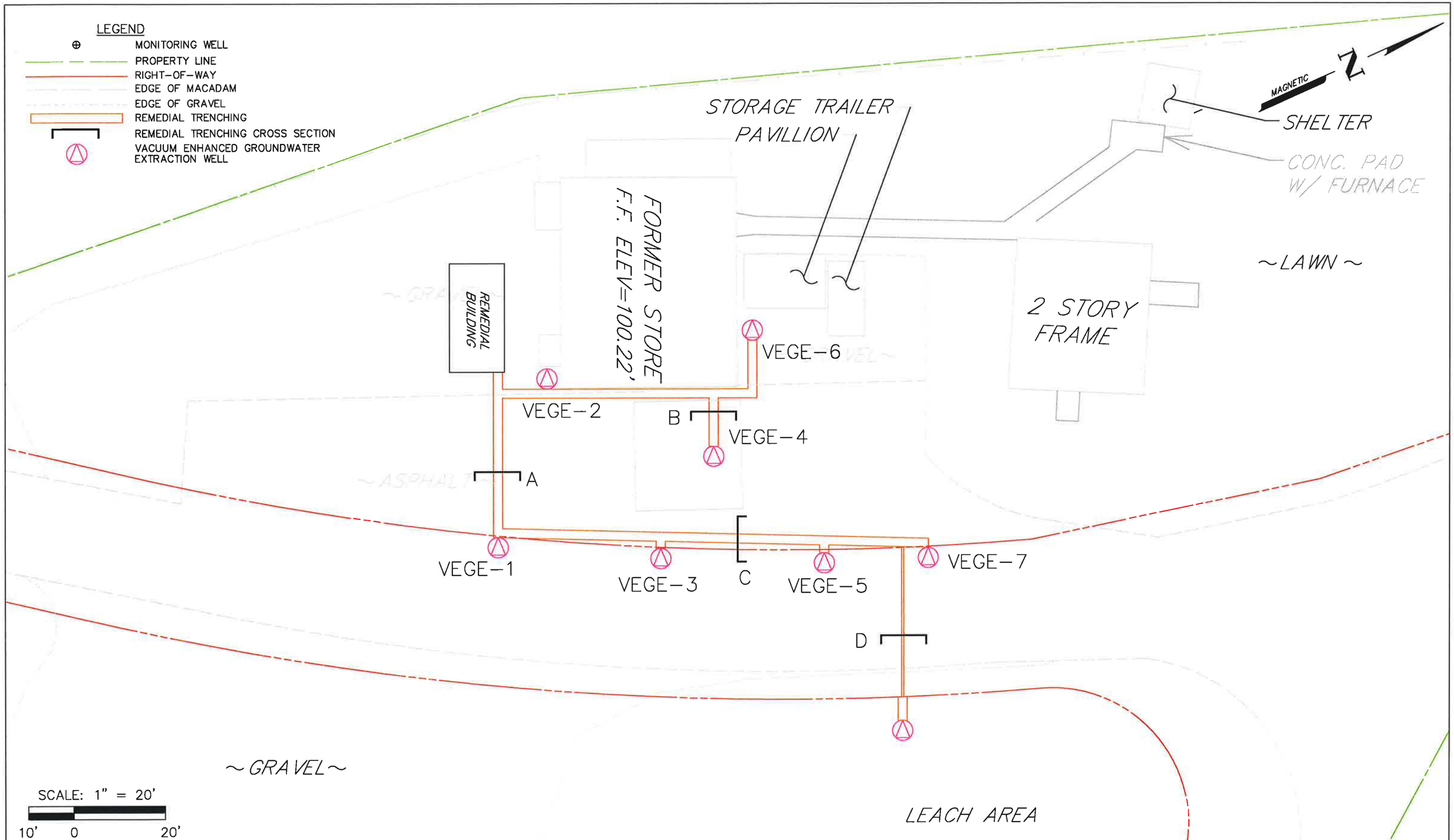
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

HIGH VACUUM VEGE
HYDRAULIC DRAWDOWN - JUNE 29, 2016
Figure 19



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Project Manager: M.C.
Checked By: MRC

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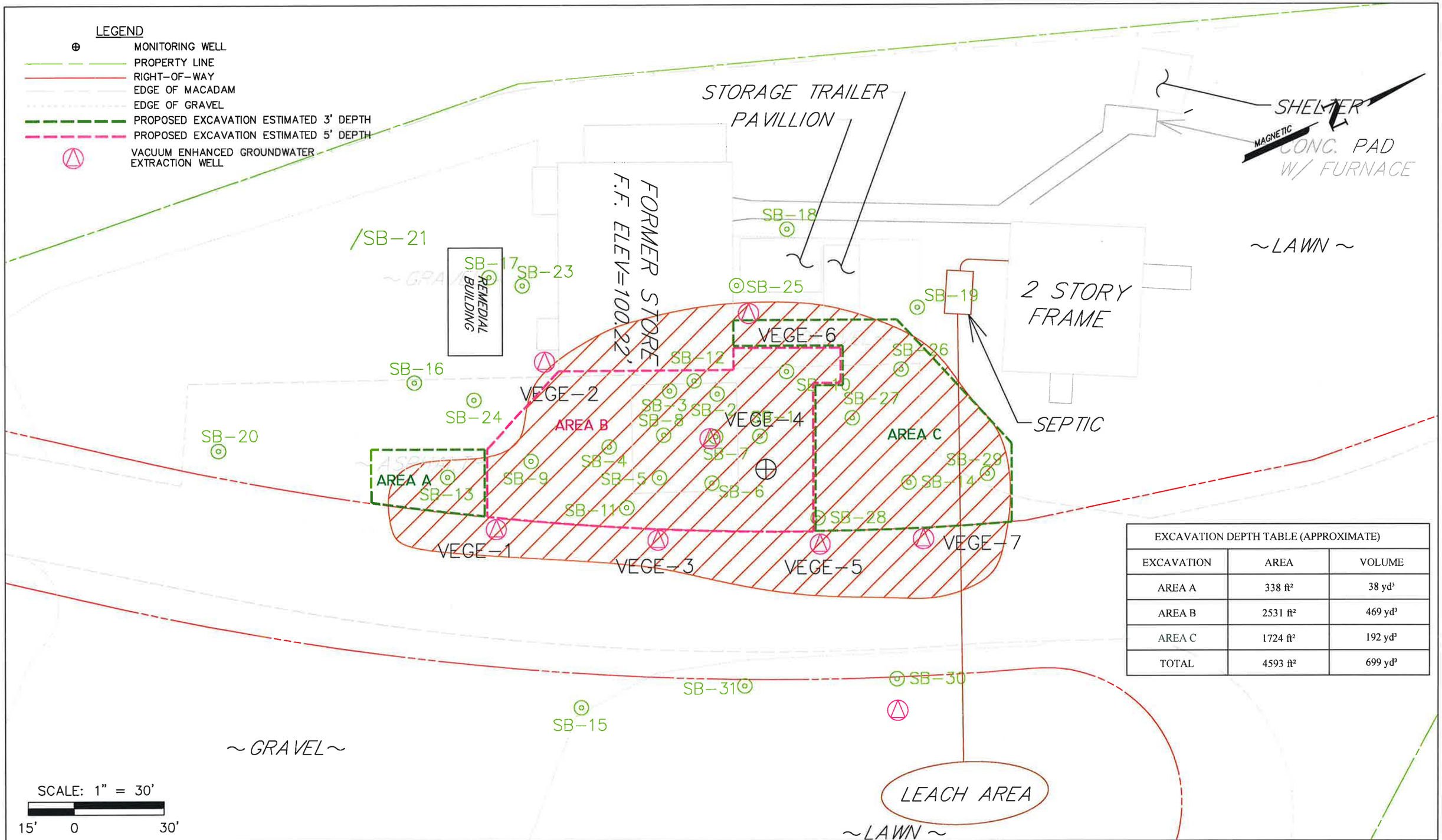
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

REMEDIAL LAYOUT
Figure 20



EXCAVATION DEPTH TABLE (APPROXIMATE)		
EXCAVATION	AREA	VOLUME
AREA A	338 ft²	38 yd³
AREA B	2531 ft²	469 yd³
AREA C	1724 ft²	192 yd³
TOTAL	4593 ft²	699 yd³

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COOKS COUNTY STORE
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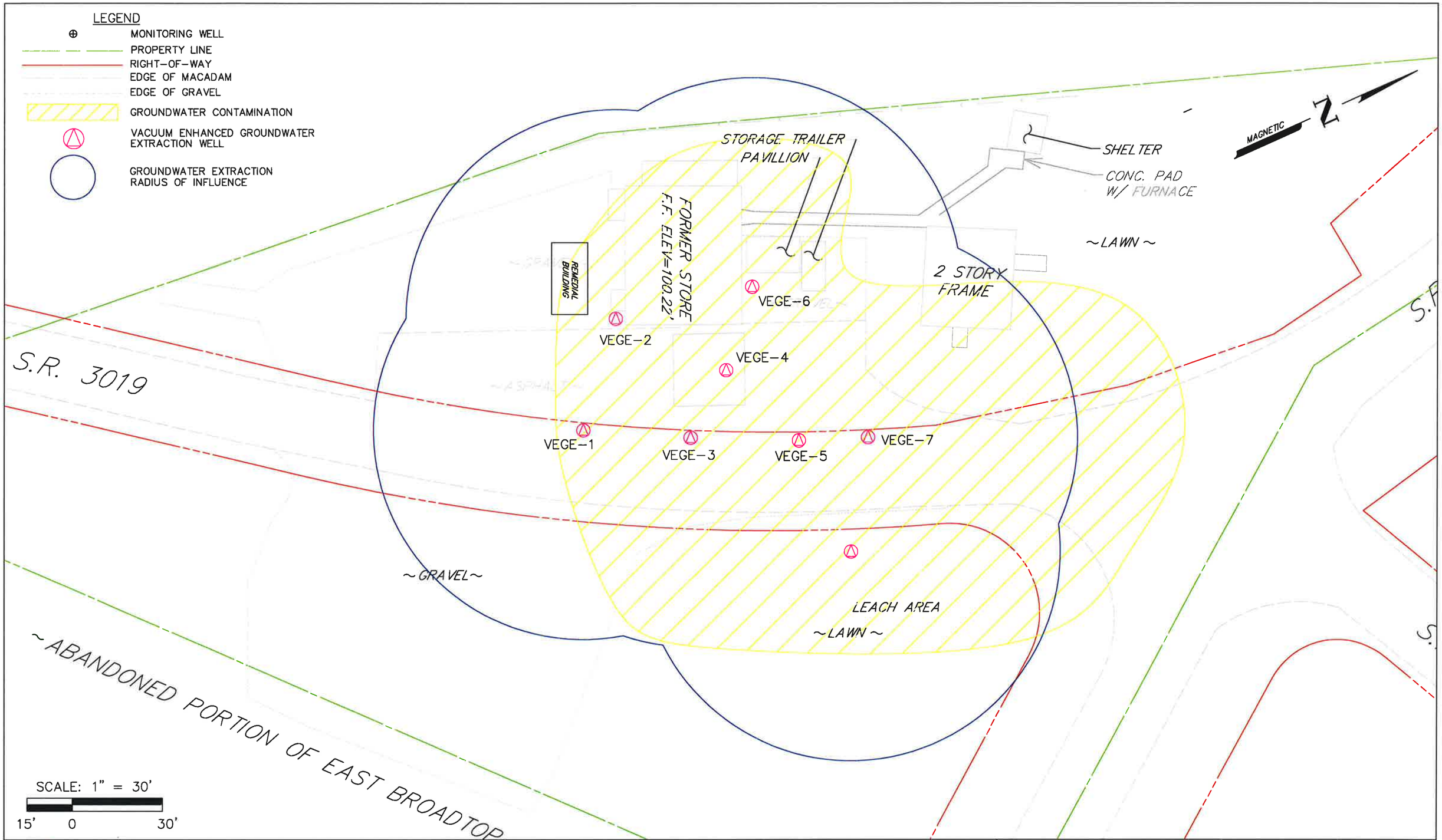
Robertsdale, PA

PROPOSED EXCAVATION
Figure 21



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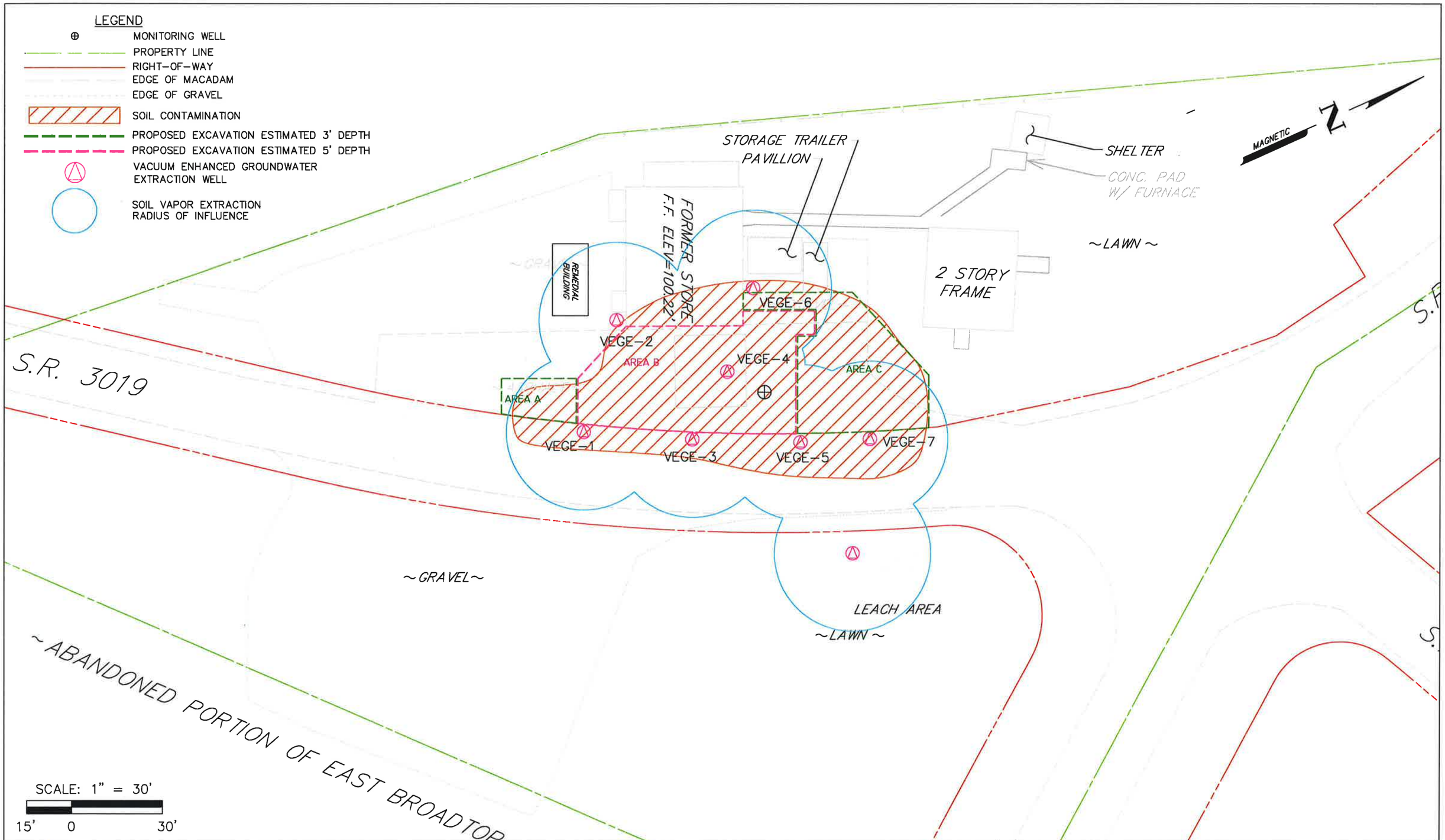
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

GROUNDWATER CONTAMINATION WITH HYDRAULIC RADII OF INFLUENCE
Figure 22



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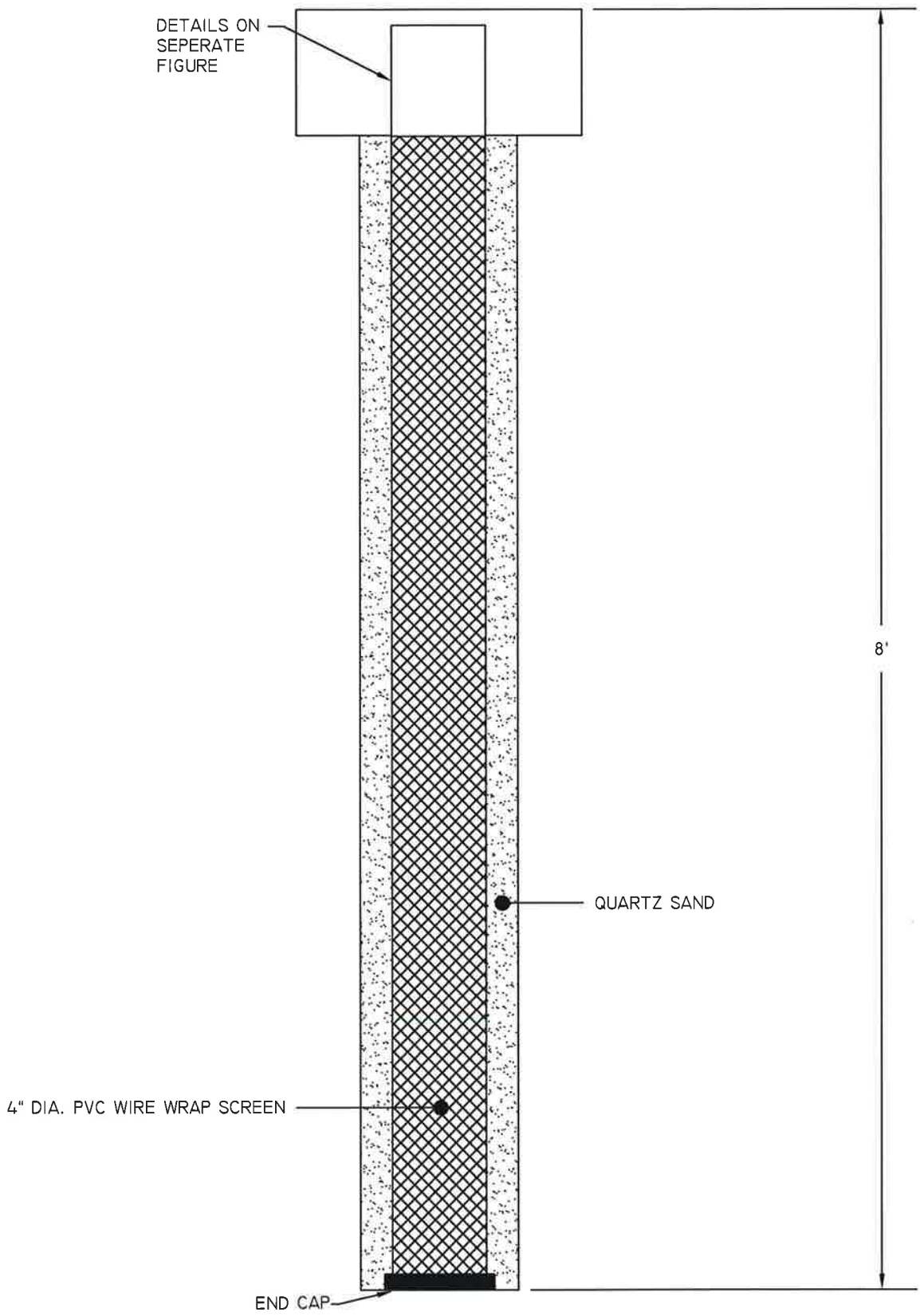
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

SOIL CONTAMINATION WITH SOIL VAPOR EXTRACTION RADII OF INFLUENCE
Figure 23

Drawn By: JRH 08-05-16



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COOKS COUNTRY STORE
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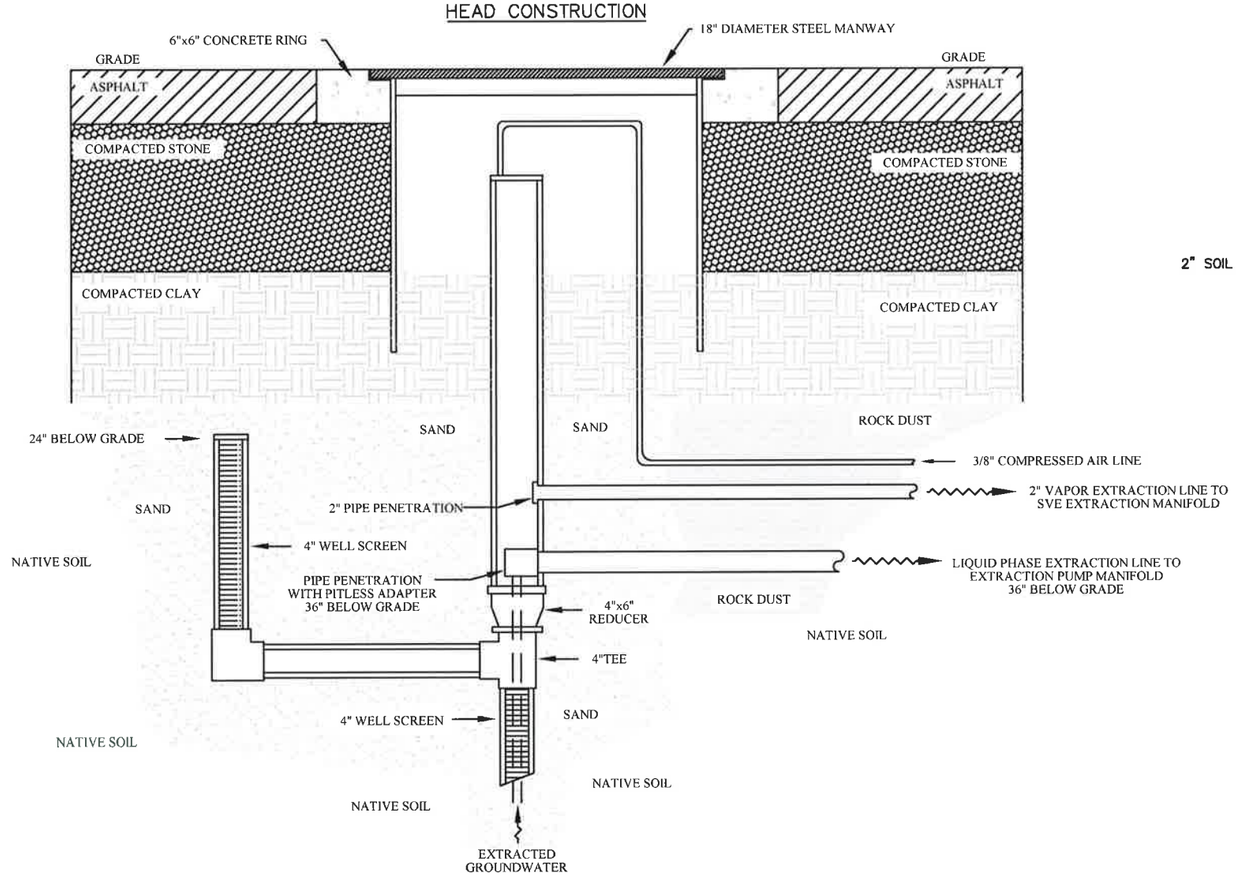
Robertsdale, Huntingdon County, PA

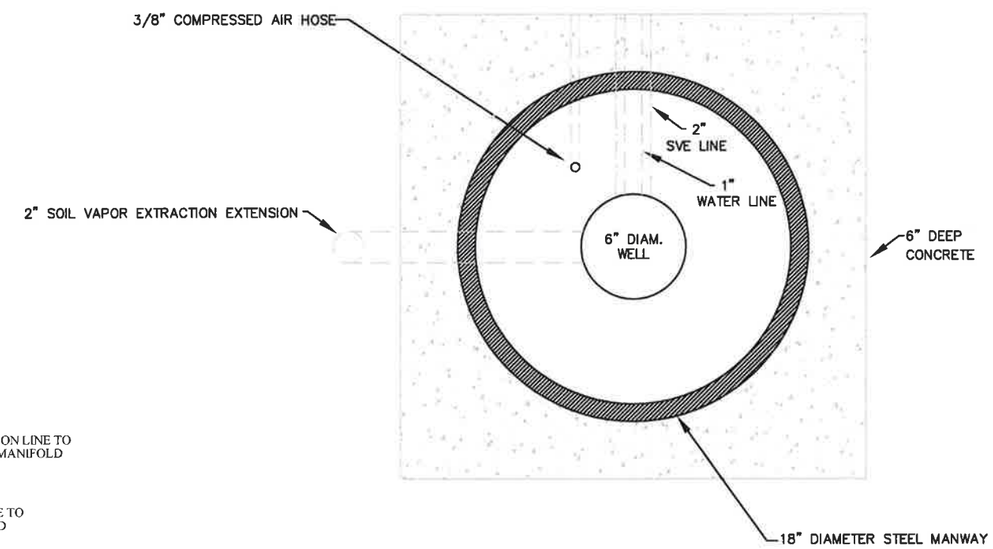
TYPICAL OVERBURDEN VACUUM ENHANCED GROUNDWATER EXTRACTION WELL CONSTRUCTION DIAGRAM

Figure 24

TYPICAL OVERBURDEN EXTRACTION WELL HEAD CONSTRUCTION



EXTRACTION WELL HEAD PLAN VIEW



NOTE: DRAWING NOT TO SCALE
FOR ILLUSTRATION ONLY

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Checked By: MRC
Date: 9-2-16

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Cooks Country Store
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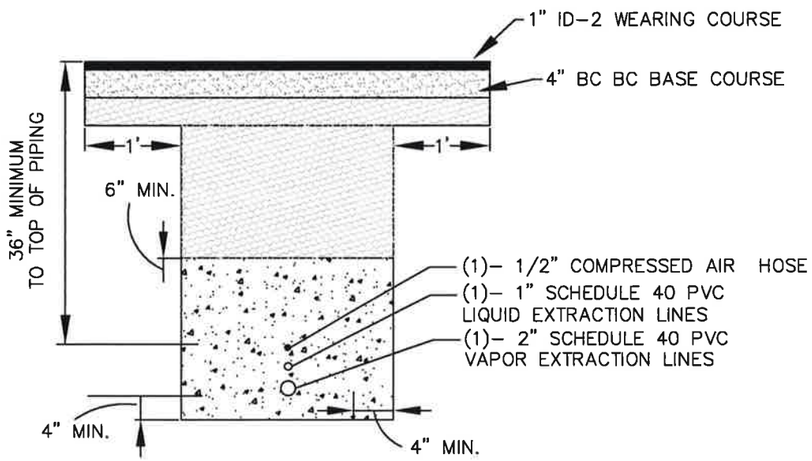
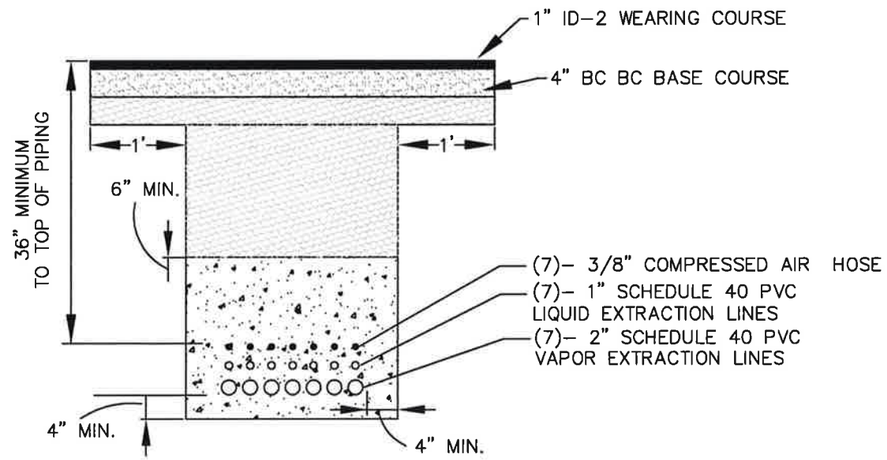
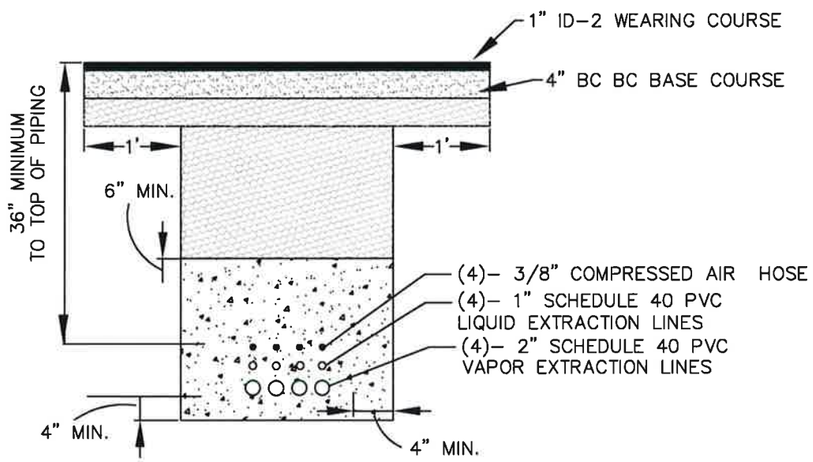
Robertsdale, Clinton County, PA
OVERBURDEN VACUUM ENHANCED GROUNDWATER EXTRACTION WELL HEAD CONSTRUCTION DETAIL
Figure 25



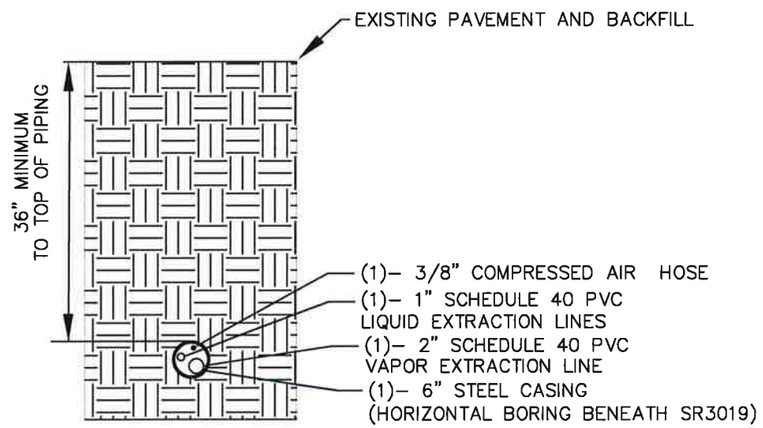
CROSS SECTION A



CROSS SECTION A



CROSS SECTION C



CROSS SECTION D

NOTES:

1. TRENCHING CROSS SECTIONS ARE NOT DRAWN TO SCALE.
2. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RETURNED TO ORIGINAL CONDITION.
3. ALL TRENCHED AREAS SHALL BE CONSTRUCTED AS INDICATED IN THESE CROSS SECTIONS. NUMBER OF INJECTION, EXTRACTION AND COMPRESSED AIR LINES WILL BE INSTALLED AS NEEDED.

LEGEND

- PIPING AREA BEDDING MATERIAL 2RC OR STONE DUST
- BACKFILL AREA BEDDING MATERIAL 2RC STONE
- PAVING LAYER
- EXISTING MATERIALS

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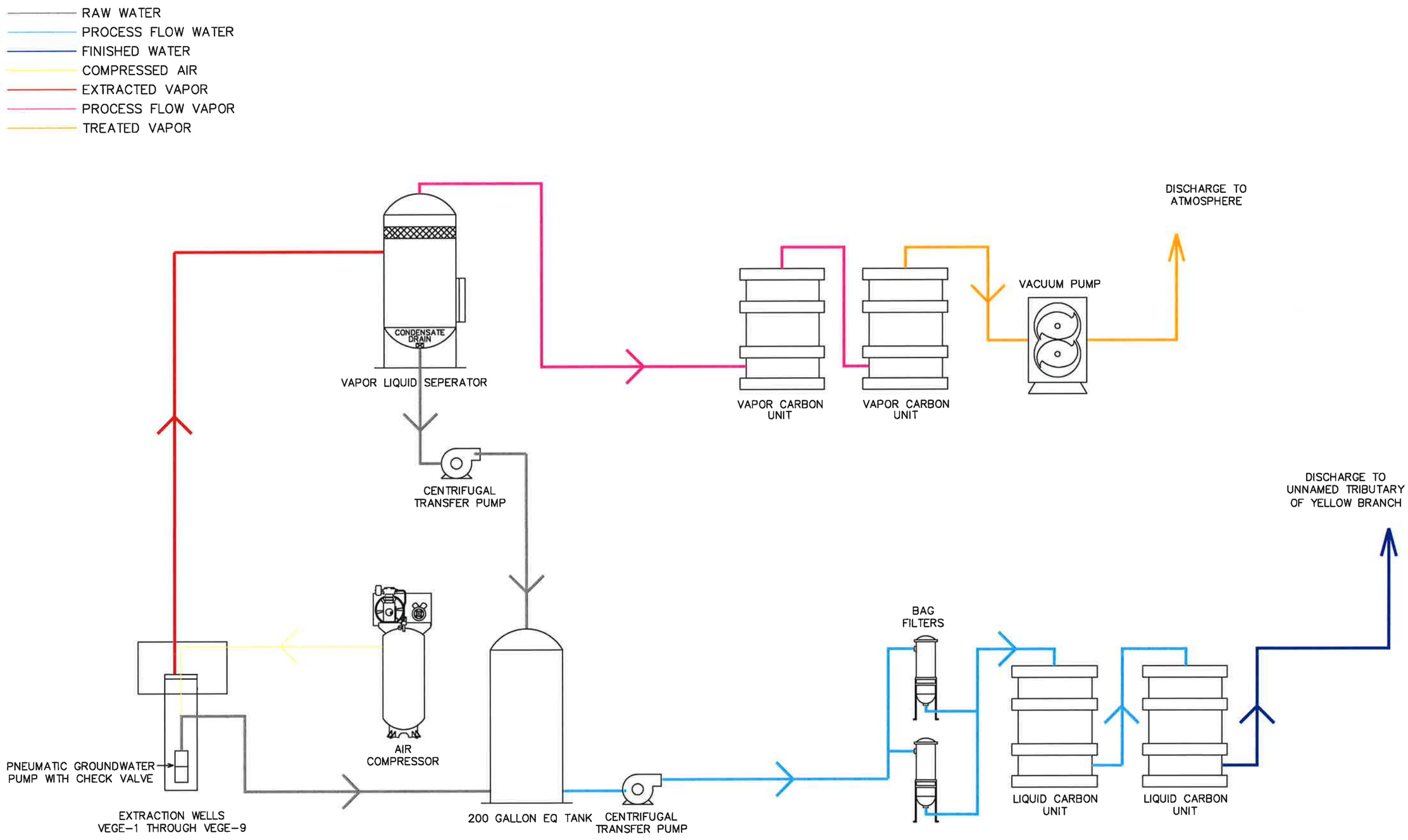
COOKS COUNTRY STORE
21042 Cooks Road,
Robertsdale, Huntingdon County, PA

REMEDIAL TRENCHING CROSS SECTIONS
Figure 26



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Process Flow Diagram.dwg

COOKS COUNTRY STORE
21042 Cooks Road
Robertsdale, Huntingdon County, PA
REMEDIAL SYSTEM PROCESS FLOW DIAGRAM
Figure 27

TABLES

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TABLE 1

MONITORING WELL CONSTRUCTION SUMMARY
COOKS COUNTRY STORE
ROBERTSDALE, PENNSYLVANIA

MRLLC Project No. 4547.15.01

Monitoring Well	Date Drilled	Total Depth (ft)	Casing Size (in) & Material	Slot Size (in) / Screened Interval (ft)	Drilling Method	Casing Elevation (ft)	Well Type
MW-1	**8/18/2015**	13.0	2" PVC	0.010/3-13'	Direct Push	98.78	Overburden Well
MW-1D	**7/19/2016**	28.0	2" PVC	0.020/22.5-28'	Auger/Air Rotary	98.41	Bedrock Well
MW-2	**8/18/2015**	12.0	2" PVC	0.010/2-12'	Direct Push	99.14	Overburden Well
MW-3	**8/18/2015**	13.5	2" PVC	0.010/3.5-13.5'	Direct Push	98.78	Overburden Well
MW-4	**8/18/2015**	13.0	2" PVC	0.010/3-13'	Direct Push	99.37	Overburden Well
MW-5	**10/13/2015**	11.0	2" PVC	0.010/2-11'	Direct Push	98.70	Overburden Well
MW-6	**10/13/2015**	11.0	2" PVC	0.010/2-11'	Direct Push	98.26	Overburden Well
MW-7	**10/14/2015**	11.0	2" PVC	0.010/2-11'	Direct Push	98.02	Overburden Well
MW-8	**10/15/2015**	12.0	2" PVC	0.010/2-12'	Direct Push	99.66	Overburden Well
MW-9	**4/19/2016**	7.0	2" PVC	0.010/3-7'	Auger	98.95	Overburden Well
MW-10	**4/20/2016**	14.0	2" PVC	0.010/3-14'	Auger	99.02	Overburden Well
MW-11	**4/19/2016**	6.0	2" PVC	0.010/3-6'	Auger	98.67	Overburden Well
MW-12	**4/19/2016**	6.5	2"PVC	0.010/3-6.5'	Auger	97.63	Overburden Well
RW-1	**3/16/2016**	9.0	4" PVC	0.010/2.5-9'	Auger	98.78	Overburden Well

Prepared By: TAK 4/21/2016
Checked By: MRC 8/10/2016

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TABLE 2

HISTORICAL GROUNDWATER ELEVATIONS

COOKS COUNTRY STORE
ROBERTSDALE, HUNTINGDON COUNTY, PA
MRLLC Project No. 4547.15.01

Well Name	Date Measured	Static Water Level (ft)	Casing Elevation (ft)	Groundwater Elevation (ft)	Comments
MW-1	8/27/2015	2.45	98.78	96.33	
	11/19/2015	1.33	98.78	97.45	
	12/9/2015	1.93	98.78	96.85	Odor/Sheen
	2/2/2016	1.45	98.78	97.33	
	5/10/2016	1.02	98.78	97.76	Odor/Sheen
	6/13/2016	1.99	98.78	96.79	
	8/3/2016	2.70	98.78	96.08	
MW-1D	7/26/2016	2.45	98.41	95.96	
	8/3/2016	2.26	98.41	96.15	
MW-2	8/27/2015	2.65	99.14	96.49	
	11/19/2015	1.83	99.14	97.31	
	12/9/2015	1.89	99.14	97.25	Odor
	2/2/2016	1.20	99.14	97.94	
	5/10/2016	1.25	99.14	97.89	Odor
	6/13/2016	2.20	99.14	96.94	
	8/3/2016	2.51	99.14	96.63	
MW-3	8/27/2015	2.52	98.78	96.26	
	11/19/2015	2.16	98.78	96.62	
	12/9/2015	1.80	98.78	96.98	
	2/2/2016	1.01	98.78	97.77	
	5/10/2016	1.02	98.78	97.76	Odor/Sheen
	6/13/2016	2.10	98.78	96.68	
	8/3/2016	2.56	98.78	96.22	
MW-4	8/27/2015	2.90	99.37	96.47	
	11/19/2015	1.78	99.37	97.59	
	12/9/2015	1.66	99.37	97.71	
	2/2/2016	1.15	99.37	98.22	
	5/10/2016	1.33	99.37	98.04	
	6/13/2016	2.45	99.37	96.92	
	8/3/2016	2.97	99.37	96.4	
MW-5	11/19/2015	2.14	98.70	96.56	
	12/9/2015	2.65	98.70	96.05	
	2/2/2016	1.87	98.70	96.83	
	5/10/2016	2.22	98.70	96.48	Odor/Sheen
	6/13/2016	2.44	98.70	96.26	
	8/3/2016	3.88	98.70	94.82	
MW-6	11/19/2015	0.89	98.26	97.37	
	12/9/2015	2.01	98.26	96.25	
	2/2/2016	0.90	98.26	97.36	
	5/10/2016	1.60	98.26	96.66	Odor
	6/13/2016	2.65	98.26	95.61	
	8/3/2016	2.90	98.26	95.36	
MW-7	11/19/2015	2.13	98.02	95.89	
	12/9/2015	1.08	98.02	96.94	
	2/2/2016	1.00	98.02	97.02	
	5/10/2016	1.15	98.02	96.87	Odor
	6/13/2016	1.92	98.02	96.10	
	8/3/2016	2.34	98.02	95.68	
MW-8	11/19/2015	2.15	99.66	97.51	
	12/9/2015	2.15	99.66	97.51	
	2/2/2016	1.15	99.66	98.51	
	5/10/2016	1.69	99.66	97.97	
	6/13/2016	2.58	99.66	97.08	
	8/3/2016	3.28	99.66	96.38	

NM - Not Measured
UK - Unknown

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TABLE 2

HISTORICAL GROUNDWATER ELEVATIONS

COOKS COUNTRY STORE
ROBERTSDALE, HUNTINGDON COUNTY, PA
MRLLC Project No. 4547.15.01

Well Name	Date Measured	Static Water Level (ft)	Casing Elevation (ft)	Groundwater Elevation (ft)	Comments
MW-9	5/10/2016	1.15	98.95	97.80	
	6/13/2016	1.44	98.95	97.51	
	8/3/2016	2.40	98.95	96.55	
MW-10	5/10/2016	1.39	99.02	97.63	Odor
	6/13/2016	2.11	99.02	96.91	
	8/3/2016	2.54	99.02	96.48	
MW-11	5/10/2016	3.69	98.67	94.98	
	6/13/2016	2.18	98.67	96.49	
	8/3/2016	2.45	98.67	96.22	
MW-12	5/10/2016	3.65	97.63	93.98	
	6/13/2016	1.76	97.63	95.87	
	8/3/2016	1.82	97.63	95.81	
RW-1	5/10/2016	1.02	98.78	97.76	
	6/13/2016	1.84	98.78	96.94	
	8/3/2016	2.60	98.78	96.18	

Prepared By: LML 8/4/2016
Checked By: MRC 8/10/2016

NM - Not Measured
UK - Unknown

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TABLE 3

SOIL SAMPLE ANALYTICAL SUMMARY
COOKS COUNTRY STORE
ROBERTSDALE, PA

MRLLC Project No. 4547.15.01

				PADEP Residential Statewide Health Standards (SHS)								
Unsaturated Soils				8,400	74,000	500	100,000	70,000	1,000,000	2,000	600,000	25,000
Saturated Soils				1,500	42,000	500	100,000	70,000	1,000,000	2,000	84,000	10,000
Direct Contact, 0-15 feet				130,000	2,200,000	57,000	10,000,000	180,000	1,900,000	1,700,000	7,700,000	160,000
				Sample Parameters								
Sample Location/Sample Depth	Unsaturated or Saturated Based on a Zone of Permanent Saturation of 5 Feet and Deeper	Sample Date	Percent Solids	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Cumene	Naphthalene
MW-1 (3')	Unsaturated	8/18/2015	86.4	164,000	42,600	8,270	231,000	82,100	566,000	<2,320	9,010	18,500
MW-1 (8')	Saturated	8/18/2015	83.1	<241	<241	439	<241	<241	<722	<241	<241	<241
MW-1D (2') [Abandoned]	Unsaturated	4/14/2016	84.7	563,000	176,000	20,500	662,000	294,000	1,580,000	<2,360	38,500	82,800
MW-2 (3')	Unsaturated	8/18/2015	87.7	211,000	69,400	5,180	9,810	60,700	323,000	<2,280	14,800	28,500
MW-2 (12')	Saturated	8/18/2015	83.4	891	318	<240	<240	336	1,450	<240	<240	<240
MW-3 (2')	Unsaturated	8/18/2015	86.6	457,000	142,000	174,000	1,090,000	273,000	1,240,000	<11,600	28,600	54,300
MW-3 (4')	Unsaturated	8/18/2015	84.7	508,000	161,000	195,000	1,260,000	318,000	1,430,000	<11,800	33,600	65,400
MW-4 (4')	Unsaturated	8/18/2015	79.2	21,700	6,720	473	1,780	13,000	52,700	<253	<1,260	2,810
MW-5 (6')	Saturated	10/13/2015	87.1	<230	<230	<230	<230	<230	<689	<230	<230	<230
MW-6 (5')	Saturated	10/15/2015	83.1	<241	<241	<241	265	<241	<722	<241	<241	<241
MW-7 (6')	Saturated	10/15/2015	85.8	1,120	358	<233	<233	<233	<699	<233	243	254
MW-9 (2')	Unsaturated	4/15/2016	88.6	<226	<226	<226	<226	<226	<677	<226	<226	<226
MW-10 (2')	Unsaturated	4/14/2016	88.7	<225	<225	<225	<225	<225	<676	<225	<225	<225
MW-11 (2')	Unsaturated	4/15/2016	77.4	<258	<258	<258	<258	<258	<775	<258	<258	<258
MW-12 (1')	Unsaturated	4/15/2016	79.6	<251	<251	<251	<251	<251	<754	<251	<251	<251
SB-1 (2')	Unsaturated	8/18/2015	85.7	556,000	65,000	9,610	1,170,000	347,000	2,350,000	<2,330	12,900	28,100
SB-1 (8')	Saturated	8/18/2015	88.3	3,940	1,240	<227	243	722	3,600	<227	<227	997
SB-2 (2')	Unsaturated	8/18/2015	86.2	590,000	196,000	3,670	648,000	298,000	1,610,000	<232	4,250	8,150
SB-2 (4')	Unsaturated	8/18/2015	79.4	80,800	25,300	2,660	29,400	29,800	136,000	<252	6,020	13,400
SB-2 (6')	Saturated	8/18/2015	85.0	68,100	21,400	6,060	63,900	33,000	148,000	<2,350	4,630	12,200
SB-3 (2')	Unsaturated	8/18/2015	86.2	241,000	80,000	30,000	50,600	88,500	428,000	<2,320	40,900	73,700
SB-3 (4')	Unsaturated	8/18/2015	78.3	179,000	51,100	9,830	116,000	83,700	435,000	<2,560	12,000	24,000
SB-4 (2')	Unsaturated	8/18/2015	87.8	251,000	65,100	8,140	14,500	45,400	221,000	<2,280	11,400	23,300
SB-4 (4')	Unsaturated	8/18/2015	77.8	5,480	1,910	1,320	381	1,870	9,150	<257	650	1,290
SB-5 (2')	Unsaturated	8/18/2015	87.5	513,000	205,000	10,800	38,700	110,000	534,000	<228	26,000	55,500
SB-5 (4')	Unsaturated	8/18/2015	74.2	690,000	216,000	120,000	1,520,000	400,000	2,040,000	<5,390	47,000	92,800
SB-6 (2')	Unsaturated	8/18/2015	85.0	399,000	123,000	116,000	1,450,000	245,000	1,150,000	<11,800	24,800	59,300
SB-6 (8')	Saturated	8/18/2015	90.2	<222	<222	<222	<222	<222	<666	<222	<222	<222
SB-7 (3')	Unsaturated	8/19/2015	82.6	130,000	48,800	<2,420	19,300	45,500	216,000	<2,420	<2,420	15,200
SB-8 (3')	Unsaturated	8/19/2015	79.9	25,300	8,880	2,870	3,560	12,900	53,700	<501	<501	3,820
SB-9 (3')	Unsaturated	8/19/2015	84.5	66,400	26,100	<1,180	<1,180	21,400	57,800	<1,180	9,810	10,500
SB-9 (4')	Unsaturated	8/19/2015	81.9	95,700	36,800	<2,440	<2,440	26,700	75,100	<2,440	13,000	13,900
SB-10 (7.5')	Saturated	8/19/2015	84.7	236,000	157,000	<2,360	<2,360	10,200	278,000	<2,360	<2,360	21,800
SB-10 (9')	Saturated	8/19/2015	87.0	<230	<230	<230	<230	<230	<690	<230	<230	<230
SB-11 (1')	Unsaturated	8/19/2015	91.4	317,000	107,000	53,700	365,000	161,000	742,000	<21,900	22,800	37,000
SB-11 (4')	Unsaturated	8/19/2015	92.0	12,100	5,030	1,480	8,000	6,940	24,100	<435	1,690	1,640
SB-12 (3')	Unsaturated	8/19/2015	78.2	94,800	33,700	3,910	5,880	43,900	171,000	<2,560	10,400	15,400
SB-12 (5')	Saturated	8/19/2015	53.6	8,810	3,020	5,920	<746	2,680	22,900	<746	906	3,160

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TABLE 3

SOIL SAMPLE ANALYTICAL SUMMARY
COOKS COUNTRY STORE
ROBERTSDALE, PA

MRLLC Project No. 4547.15.01

				PADEP Residential Statewide Health Standards (SHS)								
Unsaturated Soils				8,400	74,000	500	100,000	70,000	1,000,000	2,000	600,000	25,000
Saturated Soils				1,500	42,000	500	100,000	70,000	1,000,000	2,000	84,000	10,000
Direct Contact, 0-15 feet				130,000	2,200,000	57,000	10,000,000	180,000	1,900,000	1,700,000	7,700,000	160,000
				Sample Parameters								
Sample Location/Sample Depth	Unsaturated or Saturated Based on a Zone of Permanent Saturation of 5 Feet and Deeper	Sample Date	Percent Solids	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Cumene	Naphthalene
SB-13 (2')	Unsaturated	10/13/2015	87.8	23,700	9,050	<228	<228	882	3,150	<228	2,200	2,160
SB-14 (3')	Unsaturated	10/15/2015	90.4	147,000	51,800	3,780	40,500	75,400	303,000	<2,210	13,800	22,200
SB-15 (9.5')	Saturated	10/15/2015	90.3	<221	<221	<221	<221	<221	<664	<221	<221	<221
SB-16 (5')	Saturated	10/14/2015	83.6	<239	<239	<239	<239	<239	<717	<239	<239	<239
SB-17 (5')	Saturated	10/14/2015	86.4	714	259	<232	<232	<232	<695	<232	<232	603
SB-18 (10')	Saturated	10/14/2015	85.3	<235	<235	<235	<235	<235	<704	<235	<235	<235
SB-19 (5')	Saturated	10/14/2015	83.1	<241	<241	<241	<241	<241	<722	<241	<241	<241
SB-20 (5')	Saturated	10/15/2015	92.2	<217	<217	<217	<217	<217	<650	<217	<217	<217
MW-8/SB-21 (4')	Unsaturated	10/15/2015	79.2	<252	<252	<252	<252	<252	<757	<252	<252	<252
SB-22 (10')	Saturated	10/15/2015	85.5	<234	<234	<234	<234	<234	<702	<234	<234	<234
SB-23 (3')	Unsaturated	4/15/2016	81.6	<245	<245	<245	<245	<245	<735	<245	<245	<245
SB-24 (1')	Unsaturated	4/15/2016	86.3	<232	<232	<232	<232	<232	<695	<232	<232	<232
SB-25/VP-3 (5')	Saturated	4/20/2016	82.9	<242	<242	<242	<242	<242	<726	<242	<242	<242
SB-26 (2')	Unsaturated	4/14/2016	84.6	1,900	438	953	913	1,240	4,280	<237	465	516
SB-27 (2')	Unsaturated	4/14/2016	85.6	20,300	9,410	1,040	736	6,000	19,400	<234	2,450	4,000
SB-28 (2')	Unsaturated	4/14/2016	88.2	6,030	<2,270	<2,270	<2,270	3,150	9,040	<2,270	<2,270	4,130
SB-29 (1')	Unsaturated	4/15/2016	85.1	132,000	41,500	<235	401	25,600	56,800	<235	7,360	18,600
SB-30 (1')	Unsaturated	4/15/2016	85.7	893	257	<233	246	299	1,120	<233	<233	<233
SB-30 (6')	Saturated	4/19/2016	78.0	81,700	12,600	<2,560	<2,560	26,900	11,300	<2560	5,300	7,270
SB-31 (4')	Unsaturated	4/15/2016	83.3	<240	<241	<242	<243	<244	<720	<246	<247	<248
VP-1 (2')	Unsaturated	4/14/2016	78.9	110,000	49,400	3,990	<2,540	45,000	174,000	<2,540	10,800	26,700
VP-2 (2')	Unsaturated	4/14/2016	75.8	14,400	7,270	<2,640	<2,640	4,990	16,000	<2,640	<2,640	<2,640
VP-3 (1') [Abandoned]	Unsaturated	4/14/2016	82.7	344,000	148,000	<2,410	<2,410	8,380	119,000	<2,410	3,960	34,300
VP-4 (3')	Unsaturated	4/14/2016	88.7	<226	<226	<226	<226	<226	<677	<226	<226	<226
VP-5 (3')	Unsaturated	4/14/2016	82.8	<242	<242	<242	<242	<242	<725	<242	<242	<242

All concentrations and standards expressed in µg/kg
Red Text = PQL > PADEP RUA MSC
Blue Shaded = Concentration exceeds Direct Contact Value
Bold = Detected Concentration
Dark Shaded and Bold = Concentration exceeds Unsaturated PADEP RUA MSC
Light Shaded and Bold = Concentration exceeds Saturated PADEP RUA MSC

(S) indicates saturated soil conditions
(U) indicates unsaturated soil conditions
(M) indicates moist soil conditions

Prepared By: LML 5/4/2016
Checked By: MRC 6/29/2016

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TABLE 4

GROUNDWATER SAMPLE ANALYTICAL SUMMARY

COOKS COUNTRY STORE
ROBERTSDALE, HUNTINGDON COUNTY, PA

MR Project No. 4547.15.01

		PADEP Residential Used Aquifer Medium Specific Concentrations (MSC)								
		15	420	5	1,000	700	10,000	20	840	100
		Sample Parameter								
Sample ID	Sample Date	1,2,4-TMB	1,3,5-TMB	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Cumene	Naphthalene
MW-1	8/27/2015	937	262	1,830	1,900	795	3,470	57.2	96.9	301
	11/19/2015	1,320	640	2,450	4,350	1,030	4,650	<20.0	114	495
	12/9/2015	2,350	705	5,590	18,600	1,980	10,400	10.3	89.7	328
	2/2/2016	1,720	468	4,090	13,000	1,280	7,290	<10.0	59.6	323
	5/10/2016	1,090	384	1,540	3,150	1,180	4,400	18.2	76.7	317
MW-1D	7/26/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-2	8/27/2015	445	146	376	64.3	176	1,160	<2	47.0	101
	11/19/2015	200	81.2	1,820	39.1	94.2	1,090	2.49	36.1	50.6
	12/9/2015	291	98.5	1,850	80.4	174	1,790	2.25	48.6	67.7
	2/2/2016	229	70.2	1,190	46.2	200	1,180	<10.0	36.8	41.4
	5/10/2016	231	67.1	1,150	40.0	194	891	<10.0	37.8	38.3
MW-3	8/27/2015	442	133	1,320	1,490	414	1,750	30.5	67.8	154
	11/19/2015	370	115	552	303	402	952	17.5	45.7	119
	12/9/2015	481	136	1,500	1,830	408	1,420	15.2	35.6	99.2
	2/2/2016	240	71.6	1,290	1,390	269	842	<10.0	20.3	62.4
	5/10/2016	483	132	503	550	450	1,150	<10.0	36.0	117
MW-4	8/27/2015	504	145	82.1	553	422	1,910	<2.00	54.2	121
	11/19/2015	21.3	7.46	<2.00	5.46	7.91	38.3	<2.00	<2.00	<2.00
	12/9/2015	80.8	28.1	<2.00	14.3	31.5	149	<2.00	4.62	7.43
	2/2/2016	2.15	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	5/10/2016	4.66	<2.00	2.6	<2.00	4.07	7.14	<2.00	<2.00	<2.00
MW-5	11/19/2015	22.3	5.92	25.2	<2.00	2.50	<6.00	<2.00	4.68	<2.00
	12/9/2015	9.04	2.26	13.2	<2.00	<2.00	<6.00	<2.00	2.44	<2.00
	2/2/2016	<2.00	<2.00	8.43	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	5/10/2016	9.54	<2.00	44.1	<2.00	<2.00	<6.00	<2.00	2.83	<2.00

All results in micrograms per liter (ug/l)
TMB = Trimethylbenzene
MTBE = Methyl Tert Butyl Ether
Shaded = MSC Exceedance
Bold = Detectted
NA = Not Analyzed
NS = Not Sampled

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TABLE 4

GROUNDWATER SAMPLE ANALYTICAL SUMMARY

COOKS COUNTRY STORE
ROBERTSDALE, HUNTINGDON COUNTY, PA

MR Project No. 4547.15.01

		PADEP Residential Used Aquifer Medium Specific Concentrations (MSC)								
		15	420	5	1,000	700	10,000	20	840	100
		Sample Parameter								
Sample ID	Sample Date	1,2,4-TMB	1,3,5-TMB	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Cumene	Naphthalene
MW-6	11/19/2015	<2.00	<2.00	**5.03**	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	12/9/2015	<2.00	<2.00	**11.2**	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	2/2/2016	<2.00	<2.00	**16.7**	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	5/10/2016	<2.00	<2.00	**4.96**	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-7	11/19/2015	**19.6**	**5.99**	**46.8**	<2.00	**12.9**	<6.00	<2.00	**14.5**	**6.46**
	12/9/2015	**17.6**	**4.07**	**51.4**	<2.00	**10.4**	<6.00	<2.00	**12.3**	**2.57**
	2/2/2016	**15.8**	**2.04**	**9.85**	<2.00	**6.10**	<6.00	<2.00	**7.96**	<2.00
	5/10/2016	**6.69**	<2.00	**382**	**57.0**	**82.2**	**57.5**	**7.41**	**23.9**	**10.4**
MW-8	11/19/2015	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	12/9/2015	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	2/2/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	5/10/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-9	5/10/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-10	5/10/2016	**98.4**	**47.7**	**15.2**	**2.55**	**20.9**	**69.3**	<2.00	**5.00**	**15.0**
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-11	5/10/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
MW-12	5/10/2016	**67.1**	**20.7**	<2.00	<2.00	**9.36**	**33.9**	<2.00	**3.42**	**8.04**
	8/3/2016	**32.2**	**6.39**	<2.00	<2.00	**3.55**	**4.20**	<2.00	**2.20**	**3.16**
Inside Well	6/14/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
Outside Well	6/14/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	8/3/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
Cessna Well	6/29/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00
	7/21/2016	<2.00	<2.00	<2.00	<2.00	<2.00	<6.00	<2.00	<2.00	<2.00

Prepared By: TAK 8/4/2016
Checked By: MRC 8/10/2016

All results in micrograms per liter (ug/l)
TMB = Trimethylbenzene
MTBE = Methyl Tert Butyl Ether
Shaded = MSC Exceedance
Bold = Detectted
NA = Not Analyzed
NS = Not Sampled

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TABLE 5

SOIL GAS SAMPLE ANALYTICAL SUMMARY
COOKS COUNTRY STORE
ROBERTSDALE, PA

MRLLC Project No. 4547.15.01

		Soil Gas Residential Medium Specific Concentrations (MSC) (mg/m^3)								
		0.27	56	1.9	14.0	54	0.83	0.83	8.1	0.42
		Sample Parameter								
Sample Location	**Sample Date**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Cumene**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**MTBE**	**Naphthalene**
VP-1	7/8/2016	**43.000**	**3.400**	**33.000**	**73.890**	**2.400**	**5.400**	**5.300**	<0.540	<0.790
	7/21/2016	**6.500**	<0.570	**0.940**	<1.950	<1.900	<0.740	<0.740	<0.540	<0.790
VP-2	7/8/2016	**0.0020**	**0.0095**	**0.0023**	**0.0097**	<0.0012	**0.0036**	**0.0015**	<0.00036	**0.0053**
	7/21/2016	**0.0016**	**0.0048**	**0.0015**	**0.0090**	<0.0012	**0.0077**	**0.0025**	<0.00036	**0.0047**
VP-2 Duplicate	7/21/2016	**0.0018**	**0.070**	**0.0052**	**0.0245**	<0.0012	**0.0057**	**0.0017**	<0.00036	**0.0013**
VP-3	7/8/2016	**0.00088**	**0.0040**	**0.00045**	**0.00174**	<0.0012	**0.0012**	<0.00049	<0.00036	**0.0010**
	7/21/2016	**0.00082**	**0.0062**	**0.00082**	**0.0048**	<0.0012	**0.0039**	**0.0011**	<0.00036	**0.0041**
VP-4	7/8/2016	**0.0015**	**0.0051**	**0.00085**	**0.0035**	<0.0012	**0.0018**	<0.00049	<0.00036	**0.0025**
	7/21/2016	**0.0023**	**0.011**	**0.0014**	**0.0074**	<0.0012	**0.0050**	**0.0014**	<0.00036	**0.0046**
VP-5	7/8/2016	**0.0016**	**0.0062**	**0.00068**	**0.0030**	<0.0012	**0.0022**	**0.00061**	<0.00036	**0.0033**
	7/21/2016	**0.0032**	**0.0072**	**0.0012**	**0.0061**	<0.0012	**0.0034**	**0.00080**	<0.00036	**0.00070**
VP-5 Duplicate	7/8/2016	**0.0019**	**0.0011**	**0.00092**	**0.0042**	<0.0012	**0.0028**	**0.00066**	<0.00036	**0.0032**

Prepared By: MRC 8/8/2016
Checked By: LML 8/8/2016

All results in mg/m^3
NA = Not Analyzed
Bold = Constituent Detected
Shaded = Exceedance of PADEP Residential Soil Gas MSC_{SG}

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TABLE 6

FEASIBILITY TESTING
SOIL VAPOR EXTRACTION ANALYTICAL SUMMARY

COOKS COUNTRY STORE
ROBERTSDALE, PA

MR Project No. 4547.15.01

		PADEP Medium Specific Concentration (MSC)								
		0.83	0.83	0.27	1.9	54.0	8.1	0.42	56.0	14.0
Sample ID	Sample Date	Sample Parameters								
		1,2,4 TMB	1,2,5 TMB	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	Total Xylenes
Low Vac	6/29/2016	**150**	ND	**7,200**	**1,200**	ND	ND	ND	**12,000**	**6,790**
Mid Vac	6/29/2016	**910**	**600**	**11,000**	**3,200**	ND	ND	ND	**20,000**	**17,900**
High Vac	6/29/2016	**1,600**	**1,000**	**15,000**	**5,000**	ND	ND	ND	**27,000**	**27,500**

Prepared By: TAK 8/08/2016
Checked By: PAM 8/8/2016

All results presented in mg/m^3
TMB = Trimethylbenzene
MTBE - Methyl Tert Butyl Ether
Shaded = PADEP Medium Specific Concentration (MSC) Exceedance
BOLD = Detected
NA= Not Analyzed
NS = Not Sampled

MOUNTAIN RESEARCH, LLC

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Altoona, PA 16601
800-837-4674
www.mountainresearch.com

TABLE 7

FEASIBILITY TESTING
GROUNDWATER ANALYTICAL SUMMARY

COOKS COUNTRY STORE
ROBERTSDALE, PA

MR Project No. 4547.15.01

		PADEP Residential Used Aquifer (RUA) Medium Specific Concentrations (MSC)								
		15	420	5	700	840	20	100	1,000	10,000
		Sample Parameters								
Sample ID	Sample Date	1,2,4 - TMB	1,3,5 - TMB	Benzene	Ethylbenzene	Cumene	MTBE	Naphthalene	Toluene	Total Xylenes
Low Vac	6/29/2016	**636**	**259**	**1,380**	**425**	**26.6**	**18.0**	**185**	**1,300**	**2,830**
Mid Vac	6/29/2016	**401**	**129**	**773**	**233**	**35**	**15**	**203**	**661**	**1,490**
High Vac	6/29/2016	**1,150**	**328**	**2,510**	**983**	<100	**9.65**	**482**	**4,970**	**5,040**

Prepared By: PAM 8/4/2016

Checked By: LML 8/12/2016

All results in micrograms per liter (ug/l)
TMB = Trimethylbenzene
MTBE = Methyl Tert Butyl Ether
Shaded = PADEP Statewide Health Standard (MSC) Exceedance
BOLD = Detected
NA = Not analyzed
NS = Not Sampled

APPENDIX A

CHARACTERISTICS OF REGULATED SUBSTANCES

1,2,4 – TRIMETHYLBENZENE

Water Solubility (WS)	Density (d)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Lower Explosive Limit (LEL)	

1. 1,2,4 - TRIMETHYLBENZENE (CAS 95-63-6)

WS	= 56 ppm	d	= 0.876 g/ml
Koc	= 2,200	VP	= 4.5 mm Hg @ 20°C
LEL	= 9,ppm		

1,2,4 – Trimethylbenze (TMB) is primarily released into the environment through spills of petroleum products. TMB is considered volatile, therefore when released onto surface water(s) and soil(s) TMB will be lost to evaporation and microbial degradation. The high Koc and low solubility values indicate that TMB has little affinity for water leading to the conclusion that TMB will largely remain in the soil in the event of a sub-surface release. Additionally, density (d) of TMB is less than 1 indicating it is lighter than water.

TMB is moderately toxic to humans targeting the nervous system. TMB is not classified as a carcinogen. The non-residential Statewide Health Standard established for TMB is 35 ppb in ground water.

1,3,5 – TRIMETHYLBENZENE

Water Solubility (WS)	Density (d)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Lower Explosive Limit (LEL)	

1. 1,3,5 - TRIMETHYLBENZENE (CAS 108-67-8)

WS	= 48.9 ppm	d	= 0.8637 g/ml
Koc	= 660	VP	= 2 mm Hg @ 20°C
LEL	= Not listed in Niosh Pocket Guide		

1,3,5 – Trimethylbenze (TMB) is primarily released into the environment through spills of petroleum products. TMB is considered volatile, therefore when released onto surface water(s) and soil(s) TMB will be lost to evaporation and microbial degradation. The high Koc and low solubility values indicate that TMB has little affinity for water leading to the conclusion that TMB will largely remain in the soil in the event of a sub-surface release. Additionally, density (d) of TMB is less than 1 indicating it is lighter than water.

TMB is moderately toxic to humans targeting the nervous system. TMB is not classified as a carcinogen. The non-residential Statewide Health Standard established for TMB is 35 ppb in ground water.

BENZENE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Benzene (CAS 71-43-2) (Ref. 1)

AS	= 1,780.5 mg/L (Ref. 1)	SG	= 0.88 (Ref. 2)
Koc	= 58 (Ref. 1)	VP	= 75 mm Hg (Ref. 2)
K	= 0.35 (yr^{-1}) (Ref. 1)	LEL	= 1.2% (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

TOLUENE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Toluene (CAS 108-88-3) (Ref. 1)

AS	= 532.4 mg/L (Ref. 1)	SG	= 0.87 (Ref. 2)
Koc	= 130 (Ref. 1)	VP	= 21 mm Hg (Ref. 2)
K	= 9.01 (yr^{-1}) (Ref. 1)	LEL	= 1.1% (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

ETHYLBENZENE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Ethylbenzene (CAS 100-41-4) (Ref. 1)

AS	= 161 mg/L (Ref. 1)	SG	= 0.87 (Ref. 2)
Koc	= 220 (Ref. 1)	VP	= 7 mm Hg (Ref.2)
K	= 1.11 (yr^{-1}) (Ref.1)	LEL	= 0.8% (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

XYLENES

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Xylenes (total) (CAS 1330-20-7) (Ref. 1)

AS	= 175 mg/L (Ref. 1)	SG	= 0.87 (average) (Ref. 2)
Koc	= 350 (Ref. 1)	VP	= 8.3 mmHg (average) (Ref. 2)
K	= 0.69 (yr^{-1}) (Ref. 1)	LEL	= 1.0% (average) (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

CUMENE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Cumene (CAS 98-82-8) (Ref. 1)

AS	= 50 mg/L (Ref. 1)	SG	= 0.86 (Ref. 2)
Koc	= 2800 (Ref. 1)	VP	= 8 mm Hg (Ref. 2)
K	= 15.81 (yr^{-1}) (Ref. 1)	LEL	= 0.9% (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

MTBE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Methyl-tert-butyl-ether (CAS 1634-04-4) (Ref. 1)

AS	= 45000 (mg/L) (Ref. 1)	SG	= NL (Ref. 2)
Koc	= 12 (Ref. 1)	VP	= NL (Ref. 2)
K	= 0.693 (yr^{-1}) (Ref. 1)	LEL	= NL (Ref. 2)

NL – Not Listed

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

NAPHTHALENE

Aqueous Solubility (AS)	Specific Gravity (SG)
Organic Carbon Coefficient (Koc)	Vapor Pressure (VP)
Degradation Coefficient (K)	Lower Explosive Limit (LEL)

Naphthalene (CAS 91-20-3) (Ref. 1)

AS	= 30 mg/L (Ref. 1)	SG	= 1.15 (Ref. 2)
Koc	= 950 (Ref. 1)	VP	= 0.08 mm Hg (Ref. 2)
K	= 0.98 (yr^{-1}) (Ref. 1)	LEL	= 0.9% (Ref. 2)

References:

1. Department of Environmental Protection, Bureau of Land Recycling and Waste Management, Land Recycling and Cleanup Program. "Title 25. Environmental Protection, Department of Environmental Protection Chapter 250. Administration of Land Recycling Program," November 24, 2001.

2. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institute for Occupational and Health. NIOSH Pocket Guide to Chemical Hazards and Other Databases, Publication No. 2001-145, August 2001.

APPENDIX B

PAGWIS DATABASE SEARCH

Map Search

You must be zoomed to the level where municipality names appear to search.

○ Multiple Criteria ◉ Map

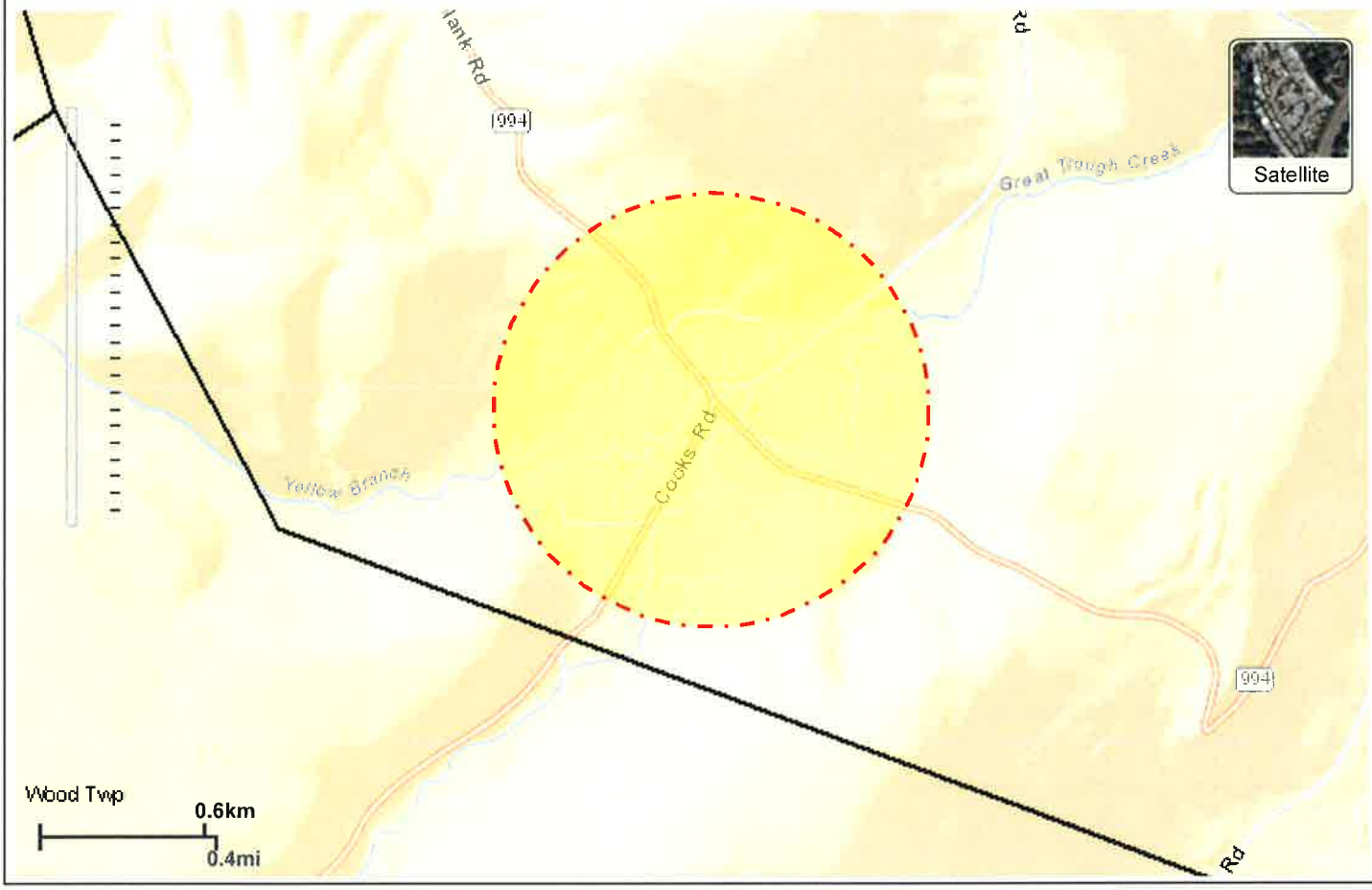
◉ Wells ○ Springs

Data Packages: ◉ General Info ○ Site Info ○ Well Construction ○ Hydrogeologic ○ Geologic

ZIP/city/address... | Go | 40 | -79 | Jump to Point

40.196, -78.090

☐ Include unlocated wells within intersected municipalities Explain



Download Data Package | Clear Selections | Contact Us

'Download Data Package' creates a data package-specific CSV file that you may open or download. If you choose to open the file, it may open in Excel (if you have Microsoft Office installed). Because of the relational nature of the database, there may be more than 1 line per well in the downloaded data. For data on public water supply wells, or water quality data, please see instructions.

Instructions

Total Records To Download : 8 Records

View Items Below

'View Items Below' creates a general list (not data package-specific) that contains links to individual well information. It is based on the search criteria entered. Not all of the records displayed below will necessarily have data corresponding to the data package you have selected.

For correct record counts after changing any search criteria or data package, you must click again on the "View Items Below" button.

Total Records Returned : 7 Records **Click on the column headers to sort the Search Results.**

PA Well ID	Driller	Driller Ref	Date Drilled	Owner	County	Municipality	Image
36442	OTHER		7/1/1978	BOLINGER, A.	HUNTINGDON	TODD TWP.	
36447	SHATZER WELL DRILLING		9/9/1975	TERRITO, GUY	HUNTINGDON	TODD TWP.	
116747	MARTIN'S WELL DRILLING			HUSTON J	HUNTINGDON	TODD TWP.	
116749	MARTIN'S WELL DRILLING			BOLINGER A	HUNTINGDON	TODD TWP.	
116748	MARTIN'S WELL DRILLING			HUSTON J	HUNTINGDON	TODD TWP.	
116754	GERALD W. CLARK WELL DRILLING, INC.			BRENNA MILE	HUNTINGDON	TODD TWP.	
116757	SHATZER WELL DRILLING			TERRITO GUY	HUNTINGDON	TODD TWP.	

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WATER WELL INFORMATION REPORT

PA Well ID: **36442** Local Well ID: **HU 226** Local Permit #:

LOCATION INFORMATION

Owner: **BOLINGER, A.**

Original Paper Record Image Available: **No**

Address of Well:

County: **HUNTINGDON**

Municipality: **TODD TWP.**

Latitude: **40.20806**

Coordinate Method:

Longitude: **-78.09167**

Data Reliability: **FIELD CHECKED BY REPORTING AGENCY (PaDAg pest. survey)**

Description of Well Location and Other Notes: **GWSI originally listed the driller as 14021**

WELL CONSTRUCTION INFORMATION

Well Driller: **OTHER** License: **-000** Driller Well ID:

Type of Activity: Date Drilled: **7/1/1978** Drilling Method: **OTHER/UNKNOWN**

Well Depth (ft): **96** Well Finish: **OPEN HOLE**

WELL SIZE

Top (ft)	Bottom (ft)	Diameter (in)
0	96	6

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	20	6	UNKNOWN			

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min): **20**

Yield Measurement Method: **VOLUMETRIC, WATCH & BUCKET**

Water Level when not pumped: (ft below land surface)

Water Level after yield test: (ft below land surface)

Length of Yield Test (minutes):

Saltwater Zone (ft):

Use of Well: **WITHDRAWAL** Use of Water: **DOMESTIC**

Depth to Bedrock (ft):

Was Well Drilled Into Bedrock? **Yes**

Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **36447** Local Well ID: **HU 228** Local Permit #:

LOCATION INFORMATION

Owner: **TERRITO, GUY**
Original Paper Record Image Available: **No**
Address of Well:
County: **HUNTINGDON**
Municipality: **TODD TWP.**
Latitude: **40.21417**
Coordinate Method:
Longitude: **-78.09000**
Data Reliability: **FIELD CHECKED BY REPORTING AGENCY (PaDAg pest. survey)**
Description of Well Location and Other Notes: **IRON FILTER.**

WELL CONSTRUCTION INFORMATION

Well Driller: **SHATZER WELL DRILLING**
License: **0045**
Driller Well ID:
Type of Activity:
Date Drilled: **9/9/1975**
Drilling Method: **AIR ROTARY**
Well Depth (ft): **88**
Well Finish: **OPEN HOLE**

WELL SIZE

Top (ft)	Bottom (ft)	Diameter (in)
0	88	6

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	42	6	UNKNOWN			

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min): **32**
Yield Measurement Method: **WEIR**
Water Level when not pumped: (ft below land surface)
Water Level after yield test: (ft below land surface)
Length of Yield Test (minutes): **4**
Saltwater Zone (ft):
Use of Well: **WITHDRAWAL**
Use of Water: **DOMESTIC**

LEVELS WHERE WATER ENTERS WELL

Top (ft)	Bottom (ft)	Yield (GPM)
65		
80		

Depth to Bedrock (ft):
Was Well Drilled Into Bedrock? **Yes**
Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **116747** Local Well ID: **X 0665** Local Permit #:

LOCATION INFORMATION

Owner: **HUSTON J**
Original Paper Record Image Available: **No**
Address of Well:
County: **HUNTINGDON**
Municipality: **TODD TWP.**
Latitude: **40.20750**
Coordinate Method:
Longitude: **-78.09167**
Data Reliability: **LOCATION MAY NOT BE ACCURATE (WWI paper)**
Description of Well Location and Other Notes:

WELL CONSTRUCTION INFORMATION

Well Driller: **MARTIN'S WELL DRILLING**
License: **1402**
Driller Well ID:
Type of Activity: **New Well**
Date Drilled:
Drilling Method:
Well Depth (ft): **96**
Well Finish: **OPEN HOLE**

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	21	6				

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min):
Yield Measurement Method: **UNKNOWN**
Water Level when not pumped: (ft below land surface)
Water Level after yield test: (ft below land surface)
Length of Yield Test (minutes):
Saltwater Zone (ft):
Use of Well: **WITHDRAWAL**
Use of Water: **DOMESTIC**
Depth to Bedrock (ft):
Was Well Drilled Into Bedrock? **Yes**
Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **116749** Local Well ID: **X 0667** Local Permit #:

LOCATION INFORMATION

Owner: **BOLINGER A** Original Paper Record Image Available: **No**

Address of Well:

County: **HUNTINGDON**

Municipality: **TODD TWP.**

Latitude: **40.20806** Coordinate Method:

Longitude: **-78.09167** Data Reliability: **LOCATION MAY NOT BE ACCURATE (WWI paper)**

Description of Well Location and Other Notes:

WELL CONSTRUCTION INFORMATION

Well Driller: **MARTIN'S WELL DRILLING** License: **1402** Driller Well ID:

Type of Activity: **New Well** Date Drilled: Drilling Method:

Well Depth (ft): **96** Well Finish: **OPEN HOLE**

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	20	6				

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min):

Yield Measurement Method: **UNKNOWN**

Water Level when not pumped: (ft below land surface)

Water Level after yield test: (ft below land surface)

Length of Yield Test (minutes):

Saltwater Zone (ft):

Use of Well: **WITHDRAWAL**

Use of Water: **DOMESTIC**

Depth to Bedrock (ft):

Was Well Drilled Into Bedrock? **Yes**

Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **116748** Local Well ID: **X 0666** Local Permit #:

LOCATION INFORMATION

Owner: **HUSTON J** Original Paper Record Image Available: **No**

Address of Well:

County: **HUNTINGDON**

Municipality: **TODD TWP.**

Latitude: **40.20917** Coordinate Method:

Longitude: **-78.09056** Data Reliability: **LOCATION MAY NOT BE ACCURATE (WWI paper)**

Description of Well Location and Other Notes:

WELL CONSTRUCTION INFORMATION

Well Driller: **MARTIN'S WELL DRILLING** License: **1402** Driller Well ID:

Type of Activity: **New Well** Date Drilled: Drilling Method:

Well Depth (ft): **80** Well Finish: **OPEN HOLE**

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	21	6				

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min): Yield Measurement Method: **UNKNOWN**

Water Level when not pumped: (ft below land surface) Water Level after yield test: (ft below land surface)

Length of Yield Test (minutes): Saltwater Zone (ft):

Use of Well: **WITHDRAWAL** Use of Water: **DOMESTIC**

Depth to Bedrock (ft): Was Well Drilled Into Bedrock? **Yes**

Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **116754** Local Well ID: **X 0672** Local Permit #:

LOCATION INFORMATION

Owner: **BRENNA MILE**
Original Paper Record Image Available: **No**
Address of Well:
County: **HUNTINGDON**
Municipality: **TODD TWP.**
Latitude: **40.20944**
Coordinate Method:
Longitude: **-78.09056**
Data Reliability: **LOCATION MAY NOT BE ACCURATE (WWI paper)**
Description of Well Location and Other Notes:

WELL CONSTRUCTION INFORMATION

Well Driller: **GERALD W. CLARK WELL DRILLING, INC.** License: **0138** Driller Well ID:
Type of Activity: **New Well** Date Drilled: Drilling Method:
Well Depth (ft): **123** Well Finish: **OPEN HOLE**

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	26	6				

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min):
Yield Measurement Method:
Water Level when not pumped: (ft below land surface) **40**
Water Level after yield test: (ft below land surface)
Length of Yield Test (minutes):
Saltwater Zone (ft):
Use of Well: **WITHDRAWAL**
Use of Water: **DOMESTIC**

LEVELS WHERE WATER ENTERS WELL

Top (ft)	Bottom (ft)	Yield (GPM)
40		
80		
90		

Depth to Bedrock (ft): **23** Was Well Drilled Into Bedrock? **Yes**

Date Printed: **8/3/2016**

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WATER WELL INFORMATION REPORT

PA Well ID: **116757** Local Well ID: **X 0675** Local Permit #:

LOCATION INFORMATION

Owner: **TERRITO GUY**
Original Paper Record Image Available: **No**
Address of Well:
County: **HUNTINGDON**
Municipality: **TODD TWP.**
Latitude: **40.21278**
Coordinate Method:
Longitude: **-78.08833**
Data Reliability: **LOCATION MAY NOT BE ACCURATE (WWI paper)**
Description of Well Location and Other Notes:

WELL CONSTRUCTION INFORMATION

Well Driller: **SHATZER WELL DRILLING**
License: **0045**
Driller Well ID:
Type of Activity: **New Well**
Date Drilled:
Drilling Method:
Well Depth (ft): **88**
Well Finish: **OPEN HOLE**

CASING

Top (ft)	Bottom (ft)	Diameter (in)	Casing Material	Seal Top	Seal Bottom	Seal Type
0	42	6				

GROUNDWATER AND GEOLOGICAL INFORMATION

Well Yield (GPM - gal per min):
Yield Measurement Method: **UNKNOWN**
Water Level when not pumped: (ft below land surface) **10**
Water Level after yield test: (ft below land surface)
Length of Yield Test (minutes): **4**
Saltwater Zone (ft):
Use of Well: **WITHDRAWAL**
Use of Water: **DOMESTIC**

LEVELS WHERE WATER ENTERS WELL

Top (ft)	Bottom (ft)	Yield (GPM)
65		
80		

Depth to Bedrock (ft): **40**
Was Well Drilled Into Bedrock? **Yes**

Date Printed: **8/3/2016**

APPENDIX C

FIELD METHODS

Drilling, Soil Sampling, Well Construction Methods

Boring/monitoring well locations were selected based on site physical constraints (i.e., overhead and underground utilities, property boundaries, locations of removed tanks and distribution system, and structures). In addition to the location of potential soil and ground water contamination, borings were advanced during the site study using the following drilling methods:

Air Rotary

Air rotary drill rigs were used to advance borings for monitoring well installation. Boring diameters ranged from 10 inches to 8 inches in diameter. Soil/monitoring boring logs were constructed by identification of drill cuttings using the Unified Soil Classification System (USCS).

Hollow Stem Auger

Hollow stem auger drilling was used to advance borings for the purpose of collecting soil samples and to install monitoring wells. The auger size used was 4 inch inside diameter (7.25 inch outside diameter). Boring logs were constructed by direct observation of the split spoon and core soil samples. Soils were described using the USCS.

Direct Push Drilling

Direct push drilling was used to collect soil samples using a continuous core. Soil samples were collected in a 5 foot x 2 inch diameter PVC tube. Lithologic logs were constructed by direct observation of the continuous soil sampling liners. Soils were described using the USCS.

Soil Sample Collection

Drill cuttings from air rotary borings were scanned for volatile organic compounds (VOCs) using a photoionization detector (PID). However, these PID measurements from the air rotary drilling method should be considered qualitative due to the high potential for volatilization of compounds in the air stream. Also, the air stream was scanned during drilling advancement in order to monitor breathing zones for health and safety protocol.

Soil samples from hollow steam auger and direct push borings were screened for VOCs using a PID. Soil samples were collected from each boring on the basis of PID measurements and visual observations. Soil samples were collected for VOC by inserting an Encore® sampler or TerraCore® Sampler into the soil core. The soil from the sampler was deposited in a laboratory provided 40-milliliter glass container and preserved with methanol. For semi-volatile analysis soils were collected into a laboratory provided 4-ounce glass jar. The samples were labeled, stored in a chilled cooler, and transported to the analytical laboratory under a chain of custody.

Monitoring Well Construction

Monitoring wells were constructed of 2 inch or 4 inch diameter PVC/Steel/Wire Wrap casing. Screened intervals were constructed of .010 machine slotted casing. Appropriately sized PVC blank riser extended wells to the ground surface. The annuli between the boreholes and screened intervals was packed with clean quartz sand. The sand pack was extended approximately two feet above the top of the screened interval. The remaining vertical interval above the sand pack was Bentonite sealed to the surface. Each well was completed in a flush mounted manway.

Direct Push and Vapor Implant Sample Point Installation Methods

Sampling point locations were selected based on site physical constraints (i.e., overhead and underground utilities, property boundaries, locations of removed tanks and distribution system, and structures), in addition to the location of potential vapor contamination based on soil and groundwater contamination. Sampling points were installed using the following methods:

Vapor Implant Sample Points

Direct push drilling/manual slide hammer is used to advance 1.5 inch diameter hollow tubes with an expendable point to the specified sampling depth. The drill string is then lifted approximately 6 inches and the expendable point released. A small layer (approximately 2 inches) of sand is then placed at the bottom of the borehole. A 6-inch long by 0.5-inch diameter, cylindrical, stainless steel sampling screen (Geoprobe® Model AT86) is attached to Teflon tubing and placed at the specified sampling depth. Sand is placed around the implant and to 6 inches above the implant. Granular bentonite pellets are used to complete the backfill of the borehole to approximately one (1) foot below surface grade. The bentonite is incrementally hydrated throughout the process to provide an adequate seal. The hollow drilling tubes are lifted from the borehole throughout the implant installation process to ensure that no borehole cave-in occurs. The borehole is then capped with a steel manway to provide access to the Poly tubing, and the remaining borehole filled with concrete to grade to complete the seal.

Groundwater Sampling Methods

The sample collection methodology used by Mountain Research was designed to comply with US Environmental Protection Agency (EPA) SW-846 protocol and the Pennsylvania Groundwater Monitoring Guidance Manual, December 1, 2001. Prior to sampling, all field sampling equipment was properly cleaned to avoid sample contamination. The static water level (SWL) of each well was measured as the first step in sampling. These measurements were used to calculate groundwater elevation at each well.

Each well was purged of at least three well volumes of fluid, or until the monitoring well went dry, using a submersible pump or dedicated disposable bailer. Samples were then collected using the dedicated disposable bailer. Groundwater was decanted from the bailer into appropriate, laboratory supplied containers. The samples were labeled and stored in an ice cooler for transport to the analytical laboratory.

Helium Leak Detection & Soil Vapor Purge Methods

Methodology used in soil gas sample point seal testing by use of a tracer gas has been based upon suggestions presented within the New York State Department of Health's (DOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* document, dated October 2006. Soil vapor sampling points are tested individually prior to sampling for adequate seal as a quality assurance / control measure. An adequate seal is required for accurate sampling to ensure surface air is not being drawn into the subsurface during the collection of a soil gas sample. Mountain Research, LLC uses helium as a tracer gas for testing soil vapor sampling points due to its compatibility with a wide range of compounds, availability and ability to be monitored with hand held detectors.

The soil vapor manway is opened, and the sampling point tubing extended and connected to a plastic bucket, which is then inverted over top the soil vapor sampling point. The vapor point tubing flows from the implant, out the ground surface and out the top of the inverted bucket to a plastic ball valve fitting. An air vacuum pump is connected to the end of the ball valve fitting. The bucket is filled with party-grade helium and ambient air is released through a hole in the bucket that is eventually sealed with duct tape to prevent leakage of helium during the integrity testing. Before performing the integrity test, the helium concentration inside of the bucket is tested using a hand held helium detector to ensure the atmosphere is saturated with helium gas. The concentration of helium within the shroud is recorded.

After a helium saturated environment is created within the shroud, soil vapor is drawn from the sample point using a graduated syringe. A minimum of three standing tubing volumes (one standing tubing volume = 48.3 cubic centimeters {cc}) of air are purged prior to testing. Standard tubing volume is calculated using the following formula and dimensions of the sample tubing; $V=\pi r^2 h$. During the testing a total volume of 180 cc of vapor were extracted using the graduated syringe. After purging is complete, the purged air is tested with the helium detector by suppressing the syringe and expelling the drawn air into a tedlar bag for measurement with the hand held helium detector. The measurement is recorded and compared to the concentration of helium detected within the shroud. If the purge vapor helium concentration is greater than 5% of the concentration of helium within the shroud, the soil gas sample point is not sampled until a more efficient seal for accurate soil vapor sampling is installed and tested. If the helium concentration is less than 5% of the concentration within the shroud, a soil vapor sample is collected. Refer to the report test for explanation of the soil vapor sample collection process. Following sample collection, the shroud test is conducted again to ensure the seal did not degrade during the course of sampling. The shroud is filled again with helium and a comparison is made again between purged air and the helium concentration within the shroud. If the purge vapor helium concentration is greater than 5% of the concentration of helium within the shroud, the soil gas sample is not sent for analysis and resampling will be performed once a more efficient seal for accurate soil vapor sampling is installed and tested. If the helium concentration is less than 5% of the concentration within the shroud, the soil vapor sample is sent for analysis.

Soil Vapor Sampling Methods

The sample collection methodology used by Mountain Research was based on vapor intrusion technical guidance provided by Pennsylvania Department Environmental Protection (PADEP), as well as generally accepted procedures and protocols. Soil vapor samples are taken from permanent vapor implants unless otherwise indicated. Refer to the direct push and vapor implant installation methodology for a description of the installation process. Following install, vapor sample points are permitted to equilibrate for at minimum two (2) week rest period, unless site specific conditions or scenarios warrant more immediate sampling. Each vapor sampling point is purged of at least 3 air volumes (determined by the size of the void or implant area), or for 5 minutes, at 0.2 liters per minute with a high volume pump, prior to sample collection. Purge rates and volumes are recorded within field forms for reference and documentation.

Samples intended for TO-15 method analysis (volatile organic compounds) are collected within laboratory certified 6-liter Summa / Silco canisters using laboratory calibrated sample compositors with a valve and gauge assembly. Tubing is used to connect the vapor sample point to the sampling canister. The valve and gauge assembly are used to determine initial and final vacuum pressures of the sample canisters throughout the sampling period. Samples are drawn into the can over a predetermined sampling period, ranging anywhere between two (2) minutes to 24 hours. Barring unforeseeable equipment malfunction or site constraints, canisters are filled to a final vacuum of -3 to -5 inches of mercury (inHg).

Soil Gas Sampling Methods (continued)

Soil vapor sampling field documentation includes the following; approximate purge rate, volume and time, canister initial vacuum level, sample start time, canister final vacuum in the level, sample end time, canister ID, compositor ID and any other pertinent information specific to the sampling event. The canister intake is secured following sample collection, and the canister is labeled and transported for laboratory analysis under chain of custody. A duplicate sample is collected each sampling event for quality assurance purposes, and the location is selected at random.

APPENDIX D

GEOLOGIC LOGS

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

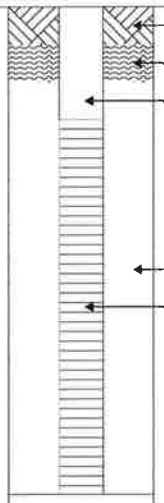
WELL NO.: MW-1

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 5 - 14' BGS.
TOC ELEVATION:

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0		47	0 - 1' - ASPHALT: MIXED WITH GRAVEL.	
		13.8	1 - 3.5' - SANDY CLAY (CLS): BLACK.	
		68.9	3.5 - 5' - SILTY CLAY (CL-ML): BROWN; LOW PLASTICITY; MOISTURE.	
5		106	5 - 6.5' - SANDY CLAY (CLS): BROWN; SATURATED WHITE SHEEN.	
		433	6.5 - 9' - SANDY CLAY (CLS): BROWN/RED; LOW PLASTICITY; WET.	
		99	9 - 14' - SANDY CLAY (CLS): BROWN; LOW PLASTICITY; MOISTURE.	
10		11		
		23		
		18	14' - REFUSAL AT 14' BGS.	
15				
20				
25				
30				
35				

WELL CONSTRUCTION DETAILS



CONCRETE 0 - 1'
BENTONITE 1 - 2'
PVC RISER DIA 2" 0 - 3'
FILTER SAND 2 - 12'
WELL SCREEN DIA 2" SLOT 0.010 3 - 13'

8-2-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: **MW-ID**

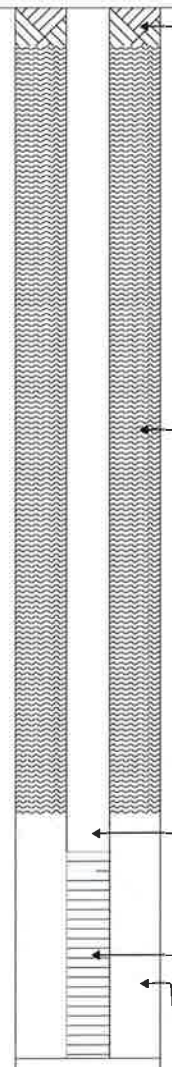
PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL-19' / TERMINATED-28' BGS.
SATURATED ZONE: 2' / 21.5' BGS.
TOC ELEVATION:

WEATHER: SUN/80'S
LOGGED BY: BEN AZAR
DRILLING METHOD: DIRECT PUSH/HSA/AIR ROTARY
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 7/19/2016
BOREHOLE DIAMETER: 6"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0			0 - 0.5' FILL.
		3,500	0.5 - 1.5' - SAND (SW): BROWN/GREY; STRONG ODOR; STAINED.
		2,343	
		4,350	1.5 - 2' - SAND (SW): BROWN/GREY; STRONG ODOR; HIGH MOISTURE CONTENT; HSA REFUSAL AT 2' BGS - SWITCHED TO AIR ROTARY - PUNCHED HOLE THROUGH COBBLE AT 2' BGS - RESUMED HSA.
		386	
5			2 - 11' - NO RECOVERY WITH AIR ROTARY; HEAVY WATER - POSSIBLY FROM RAIN; SOFT; BACK TO AUGERING AT 11' BGS.
10			11 - 13' - SANDSTONE: DRY; EASILY BROKEN.
			13 - 20' - CLAY - SAND MIX (CLS): RED; AUGER REFUSAL AT 19' BGS.
15			
20			20 - 21' - SHALE: COMPETENT RED SHALE CHIPS; HARD.
			21 - 22' - FRACTURE: VERY SOFT; LARGE VOLUME OF WATER - APPROXIMATELY 5 GALLONS/MINUTE.
			22 - 28' - SHALE: RED SHALE CHIPS; FRACTURE AT 25' BGS AND 26' BGS.
25			
			28 ' - TERMINATED AT 28' BGS - RED SHALE CHIPS.
30			
35			

GRAPHIC LOG

WELL CONSTRUCTION DETAILS



Ben Az 8/10/16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: MW-ID ABAND

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 5' BGS.
SATURATED ZONE: N/A
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: MONITORING WELL
DATE: 4-14 AND 18-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION DETAILS
0	MW-1D Aband (2')	1475 1610 1482 1361	0 - 0.5' - ASPHALT.		
			0.5 - 3.5' - SANDY LOAM (SW): BLACK/GREY; SOFT; STRONG ODOR; DRY.		
			3.5 - 5' - SANDSTONE: CREEK ROCK THROUGHOUT HOLE.		
5			5' - REFUSAL AT 5' BGS - SANDSTONE.		
10					
15					
20					
25					
30					
35					

8-8-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

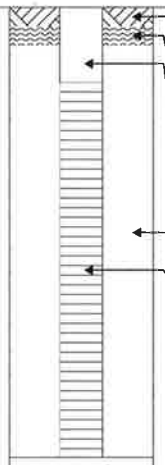
WELL NO.: MW-2

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 13.5' BGS.
SATURATED ZONE: 9 - 10' BGS.
TOC ELEVATION:

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	MW-2 (2')	1288	0 - 2.5' - SANDY SILT (MLS): BLACK; LOW RECOVERY.	
			2.5 - 4' - SANDY SILT (MLS): BROWN.	
			4 - 5' - SANDSTONE COBBLES.	
5		96.4	5 - 10' - SANDY SILT (MLS): BROWN/GREY; LOW RECOVERY.	
10	MW-2 (12')	8.0	10 - 11' - SANDSTONE ROCK: BLACK/GREY; WEATHERED.	
		164	11 - 13.5' - SANDSTONE ROCK: BROWN/WHITE; POWDERED; WEATHERED.	
			13.5 - REFUSAL AT 13.5' BGS.	
15				
20				
25				
30				
35				

WELL CONSTRUCTION DETAILS



8-2-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: MW-3

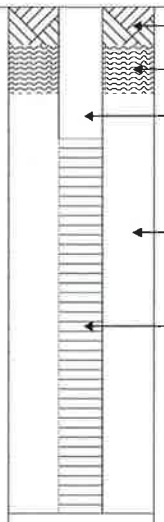
PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 15' BGS.
SATURATED ZONE: 5 - 7' BGS.
TOC ELEVATION:

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0			0 - 0.5' - APHALT: MIXED WITH GRAVEL.
	MW-3 (2')	1143	0.5 - 1.5' - SANDY CLAY (CL-ML): BLACK ON OUTSIDE AND BROWN ON INSIDE; SANDY.
			1.5 - 3' - SANDY CLAY (CL-ML): BROWN; MIXED WITH SILT.
	MW-3 (4')	122	3 - 7.5' - SANDSTONE: SANDSTONECOBBLES; SATURATED FROM 5 TO 7' BGS.
5		10.7	
		6.9	7.5 - 10' - GRAVEL (GW): RED CLAY WEATHERED ROCK.
10		5.2	10 - 12' - FILL: SLUFF.
			12 - 15' - SANDSTONE: WEATHERED ROCK.
15			15' - REFUSAL AT 15' BGS.
20			
25			
30			
35			

GRAPHIC LOG

WELL CONSTRUCTION DETAILS



CONCRETE 0 - 1'
BENTONITE 1 - 2.3'
PVC RISER DIA 2" 0 - 3.5'
FILTER SAND 2.5 - 13.5'
WELL SCREEN DIA 2" SLOT 0.010 3.5 - 13.5'

8-2-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

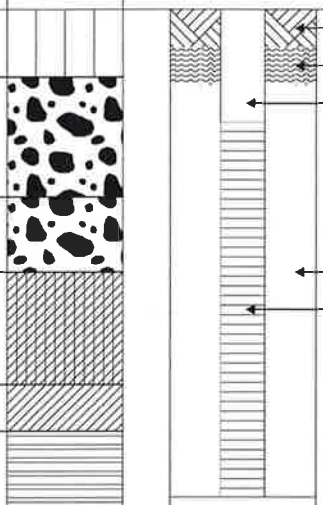
WELL NO.: MW-4

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 5 - 5.5' BGS.
TOC ELEVATION:

WEATHER: OVERCAST/70'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0	MW-4 (4')		0 - 1.8' - SANDY SILT (MLS): BLACK/GREY; LOW RECOVERY FROM 0 TO 5' BGS.
			1.8 - 5' - GRAVEL: PEA GRAVEL; NO RECOVERY.
5		158	5 - 7' - SANDY GRAVEL (GWS): DARK BROWN; MIXED WITH SILTY CLAY; SATURATED FROM 5 TO 5.5' BGS.
		12.4	
		6.3	7 - 10' - SILTY CLAY (CL-ML): DARK BROWN; LOW RECOVERY.
10			10 - 11.25' - CLAY (CL): BROWN.
			11.25 - 14' - SHALE: WEATHERED.
			14' - REFUSAL AT 14' BGS.
15			
20			
25			
30			
35			

GRAPHIC LOG



WELL CONSTRUCTION DETAILS

CONCRETE 0 - 1'
BENTONITE 1 - 2'
PVC RISER DIA 2" 0 - 3'
FILTER SAND 2 - 13'
WELL SCREEN DIA 2" SLOT 0.010 3 - 13'

8-21

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

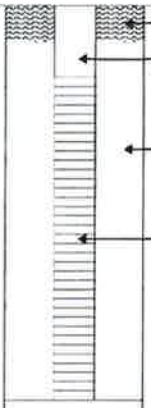
WELL NO.: MW-5

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 7 - 14' BGS.
TOC ELEVATION:

WEATHER: 60'S/CLOUDY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 10-13-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0			0 - 1' - TOPSOIL: DRY.
		0	1 - 5' - GRAVELLY CLAY (CLG): COARSE SANDS PRESENT; DRY.
		0	
		0	
		0	
5	MW-5 (6') U	34.5	5 - 7' - GRAVELLY CLAY (CLG): GRAVELLY CLAY CONTINUES; ODOR PRESENT; DRY.
		75.3	
		8.3	7 - 10' - GRAVELLY CLAY (CLG): DARK BROWN; SLIGHT ODOR; SATURATED.
		6.4	
		7.7	
10		0	10 - 14' - GRAVELLY CLAY (CLG): GRAVELLY CLAY CONTINUES; SATURATED.
		0	
		0	
		0	
		0	
15			14' - REFUSAL AT 14' BGS - LIGHT CLAY WITH WEATHERED SHALE PRESENT.
20			
25			
30			
35			

GRAPHIC LOG



WELL CONSTRUCTION DETAILS

11-24-15

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

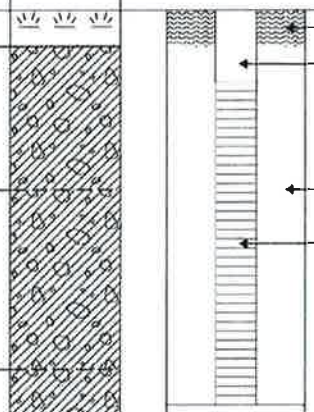
WELL NO.: **MW-6**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 5 - 14' BGS.
TOC ELEVATION:

WEATHER: 60'S/CLOUDY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 10-13-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0			0 - 1' - TOPSOIL.
		0	1 - 5' - SANDY/GRAVELLY CLAY (CLG): SANDY CLAY, WITH A LOT OF GRAVEL PRESENT; STRONG ODOR NEAR 5' BGS.
		0	
		0	
		0	
5	MW-6 (5') U	799.7	5 - 10' - GRAVELLY CLAY (CLG): ODORS PRESENT; SATURATED.
		168.8	
		31.2	
		21.9	
		17.7	
10		19.0	10 - 14' - GRAVELLY CLAY (CLG): ODORS PRESENT; SATURATED.
		55.4	
		19.3	
		21.1	
		10.8	14' - REFUSAL AT 14' BGS - WEATHERED SHALE.
15			
20			
25			
30			
35			

GRAPHIC LOG



WELL CONSTRUCTION DETAILS

11-24-15

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: **MW-7**

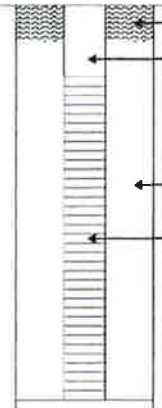
PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 12.5' BGS.
SATURATED ZONE: 6 - 12.5' BGS.
TOC ELEVATION:

WEATHER: PARTLY SUNNY/60'S
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: MONITORING WELL
DATE: 10-14-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0		0	0 - 5' - SANDY CLAY (CLS): BROWN; LOW PLASTICITY; DRY; VERY LOW RECOVERY (<1').
		0	
		0	
		0	
5	MW-7 (6') U	826.9	5 - 6' - SANDY CLAY (CLS): BLACK; STRONG ODORS; DRY.
		21.8	6 - 10' - CLAYEY SAND (SC): COARSE SANDS, WITH SOME CLAY PRESENT; ODORS AND SHEEN ON WATER; SATURATED.
		18.3	
		19.9	
10		10.8	10 - 12.5' - SAND (SC): COARSE SANDS; SHEEN ON WATER; SATURATED.
		8.6	
		8.0	
			12.5' - REFUSAL AT 12.5' BGS.
15			
20			
25			
30			
35			

GRAPHIC LOG

WELL CONSTRUCTION DETAILS



11-24-15

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

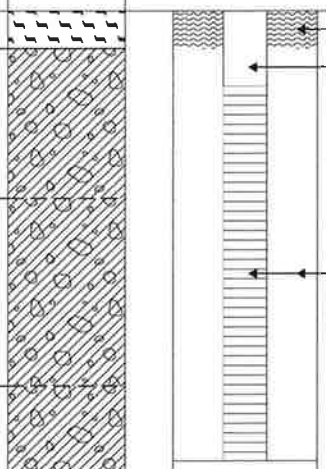
WELL NO.: SB-21/MW-8

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 4 - 14' BGS.
TOC ELEVATION:

WEATHER: 40'S/SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING/MONITORING WELL
DATE: 10-15-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0	SB-21/MW-8 (1') U	0	0 - 1' - FILL: GRAVEL FILL MATERIAL; DRY.
		0	1 - 5' - GRAVELLY CLAY (CLG): DARK BROWN; COARSE SANDS PRESENT.
		0	
		0	
5		0	5 - 10' - GRAVELLY CLAY (CLG): CONTINUES, WITH A LOT OF COARSE SANDS PRESENT.
		0	
		0	
		0	
		0	
10		0	10 - 14' - GRAVELLY CLAY (CLG): CONTINUES; SATURATED.
			14' - REFUSAL AT 14' BGS.
15			
20			
25			
30			
35			

GRAPHIC LOG



WELL CONSTRUCTION DETAILS

8/2/16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

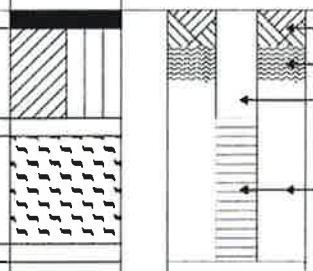
WELL NO.: **MW-9**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 7' BGS.
SATURATED ZONE: 3 - 7' BGS.
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: MONITORING WELL
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0			0 - 0.5' - ASPHALT.
	MW-9 (2')	0	0.5 - 3' - CLAYEY SAND (SC): BLACK/GREY; FINE; DRY; SATURATION AND SANDSTONE COBBLES AT 3' BGS.
		0	
		0	3 - 3.5' - SANDSTONE: SANDSTONE COBBLES.
		0	3.5 - 6.5 - FILL: SLUFF.
5		0	
		0	
		0	6.5 - 7' - SANDSTONE.
			7' - REFUSAL AT 7' BGS.
10			
15			
20			
25			
30			
35			

GRAPHIC LOG



WELL CONSTRUCTION DETAILS

CONCRETE 0 - 1'
BENTONITE 1 - 2'
PVC RISER DIA 2" 0 - 3'
WELL SCREEN DIA 2" SLOT 0.010 3 - 7'
FILTER SAND 2 - 7'

5-5-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: **MW-10**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 10' BGS.
SATURATED ZONE: 2 - 10' BGS.
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: MONITORING WELL
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION DETAILS
0	MW-10 (2')	0	0 - 5' - SAND (SW): DARK BROWN SANDY LOAM; SOFT; DRY; SANDSTONE COBBLES STARTING AT 1' BGS; SATURATED BEGINNING AT 2' BGS.		CONCRETE 0 - 1'; BENTONITE 1 - 2'; PVC RISER DIA 2" 0 - 3'
		0			
		0			
		0			
		0			
5		0	5 - 10' - SANDSTONE: BACKFILL, MIXED WITH SANDSTONE COBBLES; SATURATED THROUGHOUT.		FILTER SAND 2 - 14'; WELL SCREEN DIA 2" SLOT 0.010 3 - 14'
		0			
		0			
		0			
		0			
		0			
10			10' - REFUSAL AT 10' BGS.		
15					
20					
25					
30					
35					

5-5-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: MW-11

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6' BGS.
SATURATED ZONE: 3 - 5' BGS.
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: MONITORING WELL
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION DETAILS
0	MW-11 (2')	0	0 - 4' - SANDY CLAY (CLS): BROWN; FINE; LOW PLASTICITY; DAMP; SATURATED AT 3' BGS.		CONCRETE 0 - 1'
		0			BENTONITE 1 - 2'
		0			PVC RISER DIA 2" 0 - 3'
		0	4 - 6' - SANDSTONE.		FILTER SAND 2 - 6'
5		0			WELL SCREEN DIA 2" SLOT 0.010 3 - 6'
		0	6' - REFUSAL AT 6' BGS.		
10					
15					
20					
25					
30					
35					

5-5-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: **MW-12**

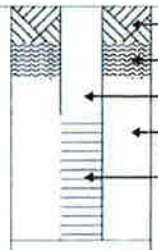
PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 9' BGS.
SATURATED ZONE: 2 - 7' BGS.
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: MONITORING WELL
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION
0	MW-12 (1')	3.2	0 - 5' - SANDY CLAY (CLS): BROWN; FINE; LOW PLASTICITY; SANDSTONE COBBLES THROUGHOUT.
		0	
		0	
		0	
5		0	5 - 8' - FILL: SLUFF.
		0	
		0	
		0	
		0	8 - 9' - SANDSTONE: HARD SANDSTONE CHUNKS.
			9' - REFUSAL AT 9' BGS.
10			
15			
20			
25			
30			
35			

GRAPHIC LOG

WELL CONSTRUCTION DETAILS



CONCRETE 0 - 1'
BENTONITE 1 - 2'
PVC RISER DIA 2" 0 - 3'
FILTER SAND 2 - 6.5'
WELL SCREEN DIA 2" SLOT 0.010 3 - 6.5'

5-5-16

MOUNTAIN RESEARCH, LLC
MONITORING WELL LOG

WELL NO.: RW-1

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14.5' BGS.
SATURATED ZONE: 5 - 7' BGS.
TOC ELEVATION:

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: RECOVERY WELL
DATE: 3-16-2016
BOREHOLE DIAMETER: 4"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION DETAILS
0			0 - 1' - ASPHALT.		CONCRETE 0 - 0.5'
		52	1 - 5' - SANDY CLAY (CLS): BLACK.		BENTONITE 0.5 - 1.5'
		43			PVC RISER DIA 2" 0 - 2.5'
		67			
		69.2			
5		112	5 - 7' - SANDY CLAY (CLS): RED/BROWN; LOW PLASTICITY; SATURATED.		WELL SCREEN DIA 2" SLOT 0.010 2.5 - 9'
		416			FILTER SAND 1.5 - 9'
		102	7 - 14.5' - SANDY CLAY (CLS): RED/BROWN; LOW PLASTICITY.		
10		15			
		28			
		17			
15			14.5' - REFUSAL AT 14.5' BGS.		
20					
25					
30					
35					

8-8-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: SB-1

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 5 - 6' BGS.

WEATHER: OVERCAST/70'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - SANDY CLAY (CLS): BLACK.	
	SB-1 (2')	1062	1 - 2' - SANDY CLAY (CLS): BLACK/BROWN.	
		1470	2 - 5' - SANDSTONE: BROWN/GREY IN COLOR; NO RECOVERY FROM 4 TO 5' BGS.	
5		630	5 - 7' - SILTY CLAY (CL-ML: BROWN; NO RECOVERY FROM 5 TO 6' BGS - SHEEN.	
	SB-1 (8')	220	7 - 9' - GRAVEL (GW): REDDISH-BROWN; SILTY.	
10		63	9 - 10' - SANDSTONE: WHITE.	
		32	10 - 12' - SANDSTONE: BROWN; COBBLES.	
		48	12 - 14' - SANDSTONE ROCK: BROWN; WEATHERED.	
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-2**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 9' BGS.
SATURATED ZONE: 5 - 6.5' BGS.

WEATHER: OVERCAST/70'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 3' - SANDY CLAY (CLS): BLACK.	
	SB-2 (2')	1127		
	SB-2 (4')	1480	3 - 5' - CLAY (CL): BROWN; LOW PLASTICITY; ODOR AND SHEEN; WET.	
5	SB-2 (6')	205	5 - 6.5' - SANDY SILT (MLS): BLACK; SATURATED.	
			6.5 - 7.5' - SANDY SILT (MLS): BROWN; HARD QUARTZ SILT.	
		36.8	7.5 - 9' - SANDSTONE.	
		22	9' - REFUSAL AT 9' BGS.	
10				
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-3**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 6.5 - 8' BGS.

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 5' - SANDY SILT (MLS): 3.5' RECOVERY; 2.5 - 3.5 - BLACK SANDY SILT; 3.5 - 5' - BROWN SANDY CLAY - LOW PLASTICITY, WET.	
	SB-3 (2')	1230		
	SB-3 (4')	598		
5		62.6	5 - 7.5' - SANDSTONE: SANDSTONE COBBLES; MIXED WITH BLACK/GREY SANDY SILT.	
		47.1	7.5 - 10' - SANDSTONE ROCK: BROWN/RED; WEATHERED; SATURATED FROM 6.5 TO 8' BGS.	
10		21.2	10 - 12' - SANDSTONE: COBBLES.	
		18	12 -14' - SILTY SAND (SM): BROWN.	
		16.3	14' - REFUSAL AT 14' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: SB-4

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 5 - 7' BGS.

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2,25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - ASPHALT.	
	SB-4 (2')	1308	1 - 1.5' - SANDY SILT (MLS): BLACK ON OUTSIDE; BROWN SANDY SILT ON INSIDE.	
			1.5 - 1.6' - SANDSTONE: BROWN/WHITE.	
	SB-4 (4')	35.3	1.6 - 4' - SANDY CLAY (CLS): GREY/BROWN.	
5			4 - 7' - SANDY SILT (MLS): BLACK; ODOR AND SHEEN; SATURATED FROM 5 TO 7' BGS.	
		14.4	7 - 10' - SILTY SAND (SM): BROWN; MIXED WITH SANDSTONE COBBLES FROM 8 TO 10' BGS.	
10			10 - 13.5' - SANDSTONE COBBLES: BROWN; NO RECOVERY FROM 10 TO 12.5' BGS.	
		11.1		
			13.5 - 14' - SANDSTONE: WEATHERED ROCK.	
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-5**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 14' BGS.
SATURATED ZONE: 6.5 - 8.5' BGS

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 0.5' - CONCRETE.	
			0.5 - 1.5' - SANDY SILT (MLS): BLACK.	
		217	1.5 - 3' SANDSTONE COBBLES; LOW RECOVERY.	
		1070	3 - 3.7' - SANDY CLAY (CLS): GREY/BLACK.	
			3.7 - 4' - SANDSTONE COBBLES.	
5			4 - 5' - SANDY SILT (MLS): BLACK.	
		44.3	5 - 7' - SANDY SILT (MLS): BROWN/GREY/BLACK; ODOR; SATURATED FROM 6.5 TO 8.5' BGS.	
		23.8	7 - 8' - SANDSTONE COBBLES.	
			8 - 10' - SANDY CLAY (CLS): RED; HARD.	
10			10 - 12' - SANDSTONE COBBLES; LOW TO NO RECOVERY.	
			12 - 13' - SILTY CLAY (CL-ML): RED.	
			13 - 14' - SHALE: WEATHERED.	
			14' - REFUSAL AT 14' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-6**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 13' BGS.
SATURATED ZONE: 10 - 12' BGS.

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-18-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
	SB-6 (2')	1119	0 - 2.5' - SANDY CLAY (CLS): BLACK; LOW RECOVERY.	
		1066	2.5 - 5' - SANDSTONE: SANDSTONE COBBLES - MIXED WITH GREY SANDY CLAY.	
5		818	5 - 6.5' - SANDY CLAY (CLS): BLACK/GREY; SHEEN; ODOR.	
	SB-6 (8')	1047	6.5 - 10' - SANDSTONE: MIXED WITH RED SANDY CLAY; LOW RECOVERY.	
10		44.3	10 - 12' - SANDSTONE: SANDSTONE COBBLES; LOW RECOVERY; SATURATED.	
			12 - 13' - SANDSTONE: WHITE; POWDERED.	
			13' - REFUSAL AT 13' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: SB-7

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 10' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - GRAVEL (GW): PEA GRAVEL; LOW RECOVERY.	
		472	1 - 1.5' - SANDY CLAY (CLS): BLACK; MIXED WITH SILT.	
	SB-7 (3')		1.5 - 5' - SANDSTONE COBBLES.	
5			5 - 9' - SANDY SILT (MLS): BLACK/RED; LOW RECOVERY; NO RECOVERY FROM 5 TO 7.5' BGS.	
		144		
		36.5	9 - 10' - SHALE: RED; WEATHERED.	
10			10 - REFUSAL AT 10' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-8**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 10' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-8 (3')	322	0 -5 ' - SANDY CLAY (CLS): BLACK/BROWN; FINE GRAINED; MIXED WITH SANDSTONE COBBLES; LOW RECOVERY.	
5		25.6	5 - 8' - SANDY SILT (MLS): BLACK; FINE GRAINED; LOW RECOVERY.	
			8 - 10' - FILL: SLUFF.	
10			10' - REFUSAL AT 10' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-9**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 9.5' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
		84.3	0 - 1' - ASPHALT: MIXED WITH BLACK SANDY SILT.	
		261	1 - 2' - SANDY SILT (MLS): BLACK.	
	SB-9 (3')	1163	2 - 5' - SANDY SILT (MLS): BLACK; FINE GRAINED.	
	SB-9 (4')	1064		
5		170	5 - 8' - SILTY CLAY (CL-ML): RED; FINE GRAINED; SANDY; NO RECOVERY FROM 5 TO 7' BGS.	
		9.6		
		4.6	8 - 9.5' - GRAVELLY CLAY (CLG): RED CLAY, MIXED WITH WEATHERED SHALE GRAVEL.	
10			9.5' - REFUSAL AT 9.5' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-10**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 9.5' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0		1.8	0 - 1' - ASPHALT: MIXED WITH SILTY GRAVEL STONE.	
			1 - 5' - SANDSTONE: BACKFILL ROCK.	
5			5 - 8.5' - SANDY CLAY (CLS): BLACK/GREY; SHEEN; NO RECOVER FROM 5 TO 7' BGS.	
	SB-10 (7.5')	571		
	SB-10 (8')	62.2	8.5 - 9.5' - SANDY CLAY (CLS): RED; MIXED WITH WEATHERED ROCK.	
10			9.5' - REFUSAL AT 9.5' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-11**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 4' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-11 (1')	1004	0 - 1' - SANDY SILT (MLS): BLACK.	
		612	1 - 2' - SANDY SILT (MLS): BROWN.	
	SB-11 (4')	1383	2 - 4' - SANDSTONE COBBLES; WHITE; FINE GRAINED; NO RECOVERY FROM 2 - 3' BGS.	
5			4' - REFUSAL AT 4' BGS.	
10				
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-12**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: 13' BGS.
SATURATED ZONE: N/A

WEATHER: SUNNY/80'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 8-19-2015
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 0.5' - CONCRETE.	
		17.0	0.5 - 7.5' - SANDY CLAY (CLS): BLACK; NO RECOVERY FROM 5 TO 7.5' BGS.	
		775		
	SB-12 (3')	862		
		485		
5	SB-12 (5')	183		
		29	7.5 - 10' - SHALE: BROWN/WHITE; WEATHERED.	
10		12.1	10 - 13' - SHALE: RED; WEATHERED.	
		6.2		
			13' - REFUSAL AT 13' BGS.	
15				
20				
25				
30				
35				

8-2-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-13**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 3 - 14' BGS.

WEATHER: 60'S/SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-13-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-13 (2')	2.4	0 - 1' - FILL: FILL GRAVEL.	
		823.4 119.3 21.1	1 - 5' - BOULDERS (BLDRCBB): BOULDERS, MIXED WITH BROWN COARSE SANDS; SATURATION AT 3' BGS.	
5		18.3	5 - 10' - GRAVELLY SAND (SWG): SOME SANDY CLAY PRESENT; SOME SHEEN ON WATER; BROWN SANDS AND CLAY; SATURATED.	
10			10 - 14' - GRAVELLY CLAY (CLS): SATURATED.	
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

8/2/16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-14**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 5 - 14' BGS.

WEATHER: 60'S/UNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-13-2014
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-14 (3')	0.0	0 - 1' - ASPHALT: MIXED WITH GRAVEL FILL; DRY.	
		0.0	1 - 5' - SAND (SW): COARSE SANDS, MIXED WITH BOULDERS; LIGHT BROWN SANDS; STRONG ODORS AT 4 - 5' BGS; DRY.	
		118.8		
		1211		
5		81.1	5 - 10' - GRAVELLY CLAY (CLG): LIGHT BROWN; A LOT OF COARSE SANDS PRESENT; SATURATED.	
		13.3		
		0.0		
		0.0		
		0.0		
10		0.0	10 - 14' - GRAVELLY CLAY (CLG): GRAVELLY CLAY CONTINUES; SATURATED.	
		0.0		
		0.0		
		0.0		
		0.0	14' - REFUSAL AT 14' BGS.	
15				
20				
25				
30				
35				

8/2/16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-15**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 15' BGS.
SATURATED ZONE: 10 - 15' BGS.

WEATHER: 60'S/CLOUDY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-13-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0		0	0 - 5' - GRAVEL WITH CLAY (GW-GC): GRAVEL, MIXED WITH FINE GRAIN SANDY CLAY; MORE GRAVEL THAN CLAY; MAINLY SANDSTONE GRAVEL; CLAY IS DARK BROWN; LOW PLASTICITY; DRY.	
		0		
		0		
		0		
5		0	5 - 10' - GRAVEL WITH CLAY (GW-GC): GRAVEL, MIXED WITH SANDY CLAY CONTINUES - MORE COARSE SANDS - STILL MAINLY SANDSTONE; MOIST FROM 8 TO 8.5' BGS - REMAINDER OF INTERVAL IS DRY.	
		0		
		0		
		0		
	SB-15 (9.5') U	0		
10		0	10 -13' - GRAVEL WITH CLAY (GW-GC): GRAVEL MIXED WITH CLAY CONTINUES; SATURATED.	
		0		
		0		
		0	13 - 15' - SILTY CLAY (CL-ML): LIGHT BROWN; VERY LOW PLASTICITY; NO GRAVEL PRESENT.	
		0		
15			15' - REFUSAL AT 15' BGS - WEATHERED SHALE.	
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-16**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 5 - 14' BGS.

WEATHER: 60'S/PARTLY SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-14-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
		0	0 - 1' - FILL: GRAVEL.	
		0	1 - 5' - GRAVELLY CLAY (CLG): LIGHT BROWN; MOSTLY SANDSTONE GRAVEL; ODOR NEAR 5' BGS; DRY.	
		0		
		0		
	SB-16 (5') U	74.3		
5		14.4	5 - 10' - GRAVEL WITH CLAY (GW-GC): MOSTLY GRAVEL - SMALL AMOUNT OF CLAY; SATURATED.	
		8.8		
		0		
		0		
10		0	10 - 14' - SANDY CLAY (CLS): COARSE SANDS; SATURATED.	
		0		
		0		
		0		
		0	14' - REFUSAL AT 14' BGS - WEATHERED SHALE.	
15				
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-17**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 5 - 14' BGS.

WEATHER: 60'S/PARTLY SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-14-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
		0.0	0 - 5' - GRAVELLY CLAY: DARK BROWN; COARSE SANDS PRESENT; MOSTLY SANDSTONE GRAVEL; ODOR FROM 4 TO 5' BGS; DRY.	
		0.0		
		0.0		
		33.6		
	SB-17 (5') U	39.2		
5		10.7	5 - 10' - SAND (SW): GREY; CONSOLIDATED SANDS; VERY LITTLE GRAVEL - MOSTLY COARSE GRANED SANDS; SATURATED.	
		13.5		
		1.1		
		1.9		
		3.1		
10		2.8	10 -14' - SAND (SW): BLACK/GREY; CONSOLIDATED SANDS CONTINUE; STRONG ODORS; SATURATED.	
		10.9		
		6.3		
		4.4		
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-18**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 15' BGS.
SATURATED ZONE: 0 - 5' / 0 - 15' BGS.

WEATHER: 60'S/PARTLY SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-14-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-18 (10') U	0	0 - 5' - FILL: LOW RECOVERY (1'); ALL LIMESTONE FILL GRAVEL; SATURATED.	
		0		
		0		
		0		
5		0	5 - 10' - GRAVEL (GW): BROWN; MAINLY GRAVEL - SOME SILTY CLAY; DRY.	
		0		
		0		
		0		
		0		
10		0	10 - 15' - GRAVELLY CLAY (CLG): LIGHT BROWN; MOSTLY SANDSTONE GRAVEL; SATURATED.	
		0		
		0		
		0		
		0		
15		0	15' - REFUSAL AT 15' BGS.	
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-19**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 5 - 14' BGS.

WEATHER: 60'S/PARTLY SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-14-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - TOPSOIL.	
		0	1 - 4' - SANDY CLAY (CLS): BROWN; FINE GRAIN; LOW PLASTICITY; DRY.	
		0		
		0		
		0		
		0	4 - 5' - SAND (SW): GREY; COARSE; MOIST.	
5	SB-19 (5') U	0	5 - 10' - SAND (SW): GREY SAND CONTINUES; COARSE; SATURATED.	
		0		
		0		
		0		
		0		
10		0	10 - 14' - GRAVELLY CLAY (CLG): MIXED WITH SANDS AND SANDSTONE; SATURATED.	
		0		
		0		
		0		
		0		
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-20**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 8.5' BGS.
SATURATED ZONE: 5 - 8.5' BGS.

WEATHER: 40'S/SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-15-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - ASPHALT - MIXED WITH FILL GRAVEL.	
	SB-20 (5') U	0	1 -5' GRAVELLY SANDS (SWG): LIGHT BROWN; MIXED WITH SOME SAND CLAY; MOSTLY SANDSTONE GRAVEL.	
		0		
		0		
		0		
5		0	5 - 8.5' - GRAVELLY SANDS (SWG): BROWN; MORE SANDY CLAY PRESENT; NO ODOR OR SHEEN ON WATER.	
		0		
		0		
		0		
			8.5' - REFUSAL AT 8.5' BGS.	
10				
15				
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-22**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 14' BGS.
SATURATED ZONE: 10 - 14' BGS.

WEATHER: 50'S/SUNNY
LOGGED BY: KEVIN CLAYCOMB
DRILLING METHOD: DIRECT PUSH
OPERATOR: DAVE BENNETT
BOREHOLE COMPLETION: SOIL BORING
DATE: 10-15-2015
BOREHOLE DIAMETER: 2.5"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
		0	0 - 1' - TOPSOIL: DARK BROWN.	
		0	1 - 5' - SANDY CLAY (CLS): BROWN/ORNGE; FINE GRAIN; LOW PLASTICITY; DRY.	
		0		
		0		
		0		
5		0	5 - 10' - GRAVELLY CLAY (CLG): RED/BROWN; MIXED WITH COARSE SANDS; DRY.	
		0		
		0		
		0		
		0		
	SB-22 (10') U	0		
10		0	10 - 14' - GRAVELLY CLAY (CLG): RED/BROWN GRAVELLY CLAY CONTINUES; SATURATED.	
		0		
		0		
		0		
		0		
15			14' - REFUSAL AT 14' BGS.	
20				
25				
30				
35				

11-24-15

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-23**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6' BGS.
SATURATED ZONE: 3.5 - 5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
	SB-23 (3')	0	0 - 2' - ASPHALT: BACKFILL/ASPHALT.	
		0		
		0	2 - 3.5' - SANDY LOAM (SW): BROWN; FINE; DRY.	
		0	3.5 - 5' - SANDY LOAM (SW): BROWN; FINE; SATURATED AT 3.5' BGS.	
5		0	5 - 6' - SANDSTONE: STAINING ON ROCK.	
		0	6' - REFUSAL AT 6' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-24**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 5.5' BGS.
SATURATED ZONE: 2 - 5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-24 (1')	0	0 - 0.5' - ASPHALT.	
		3	0.5 - 2' - SANDY CLAY (CLS): BROWN; SILTY; SOFT; LOW PLASTICITY; DRY;	
		0	2 - 4.5' - SANDY CLAY (CLS): GREY; FINE; LOW PLASTICITY; SANDSTONE AT 4' BGS.	
		0		
5		0	4.5 - 5.5' - SANDSTONE - 6" OF RECOVERY.	
		0	5.5' - REFUSAL AT 5.5' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-26**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6' BGS.
SATURATED ZONE: 2.5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-26 (2')	17.1 29.6	0 - 0.5' - ASPHALT.	
			0.5 - 4' - SANDY LOAM (SW): BLACKISH-GREY; FINE; DRY; SOFT; STRONG ODOR; NO STAINING; SATURATED AT 2.5' BGS.	
5			4 - 6' - SANDSTONE: 6" OF RECOVERY.	
			6' - REFUSAL AT 6' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-27**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6' BGS.
SATURATED ZONE: 2 - 5.5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 0.5' - ASPHALT.	
	SB-27 (2')	192	0.5 - 3.5' - SANDY LOAM (SW): BLACK; FINE; DRY; SOME CLAY AND SANDSTONE PIECES.	
		347		
		219		
		0	3.5 - 6' - SANDSTONE: LARGE SANDSTONE COBBLES COVERING THE WHOLE WAY AROUND THE HOLE.	
5		0		
		0	6' - REFUSAL AT 6' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-28**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 5.5' BGS.
SATURATED ZONE: 3 - 5.5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 0.5' - ASPHALT.	
	SB-28 (2')	51.9	0.5 - 3.5' - SILTY SAND (SM): BLACK; FINE; SOFT; DRY.	
		1,533		
		0		
		0	3.5 - 5.5' - SANDSTONE: LARGE SANDSTONE COBBLES.	
5		0		
			5.5' - REFUSAL AT 5.5' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-29**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6.5' BGS.
SATURATED ZONE: 2 - 4.5' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-29 (1')	1,536	0 - 2' - SANDY CLAY (CLS): BLACK/GREY; FINE; LOW PLASTICITY; SATURATED AT 2' BGS; SANDSTONE COBBLES THROUGHOUT.	
		1,095	2 - 5' - SANDSTONE: SANDSTONE COBBLES THROUGHOUT HOLE.	
		0		
		0		
5		0	5 - 6.5' - SANDSTONE: SANDSTONE - 6 INCHES OF RECOVERY.	
		0	6.5' - REFUSAL AT 6.5' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-30**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 6' BGS.
SATURATED ZONE: N/A

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-30 (1')	2.3	0 - 5' - TOPSOIL: MIXED WITH CLAY.	
		0		
		0		
		0		
		0		
5	SB-30 (6')	116	5 - 6' - CLAY (CL): BROWN; TIGHT; 4 INCHES OF SANDSTONE; STAINING AND ODOR.	
			6' - REFUSAL AT 6' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **SB-31**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: REFUSAL AT 5.5' BGS.
SATURATED ZONE: N/A

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: SOIL BORING
DATE: 4-19-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	SB-31 (4')	0	0 - 5' - SILTY LOAM (ML): BROWN; SANDY; FINE; DRY; SANDSTONE PRESENT.	
		0		
		0		
		0		
		0		
5			5 - 5.5' - SANDSTONE: SANDSTONE THROUGHOUT - 6 INCHES OF RECOVERY.	
			5.5' - REFUSAL AT 5.5' BGS.	
10				
15				
20				
25				
30				
35				

5-5-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **VP-3 ABANDON**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 5' BGS.
SATURATED ZONE: 2' BGS.

WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-14-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	**VP-3 ABANDON (1')**	222 0 0 0 0	0 - 5' - SANDY CLAY (CLS): BLACK/BROWN; LOW PLASTICITY; FINE; DAMP; SOFT; SATURATED AT 2' BGS.	
5			5' - TERMINATED AT 5' BGS - SANDY CLAY.	
10				
15				
20				
25				
30				
35				

8-8-16

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: VP-1

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 5' BGS.
SATURATED ZONE: 3' BGS.

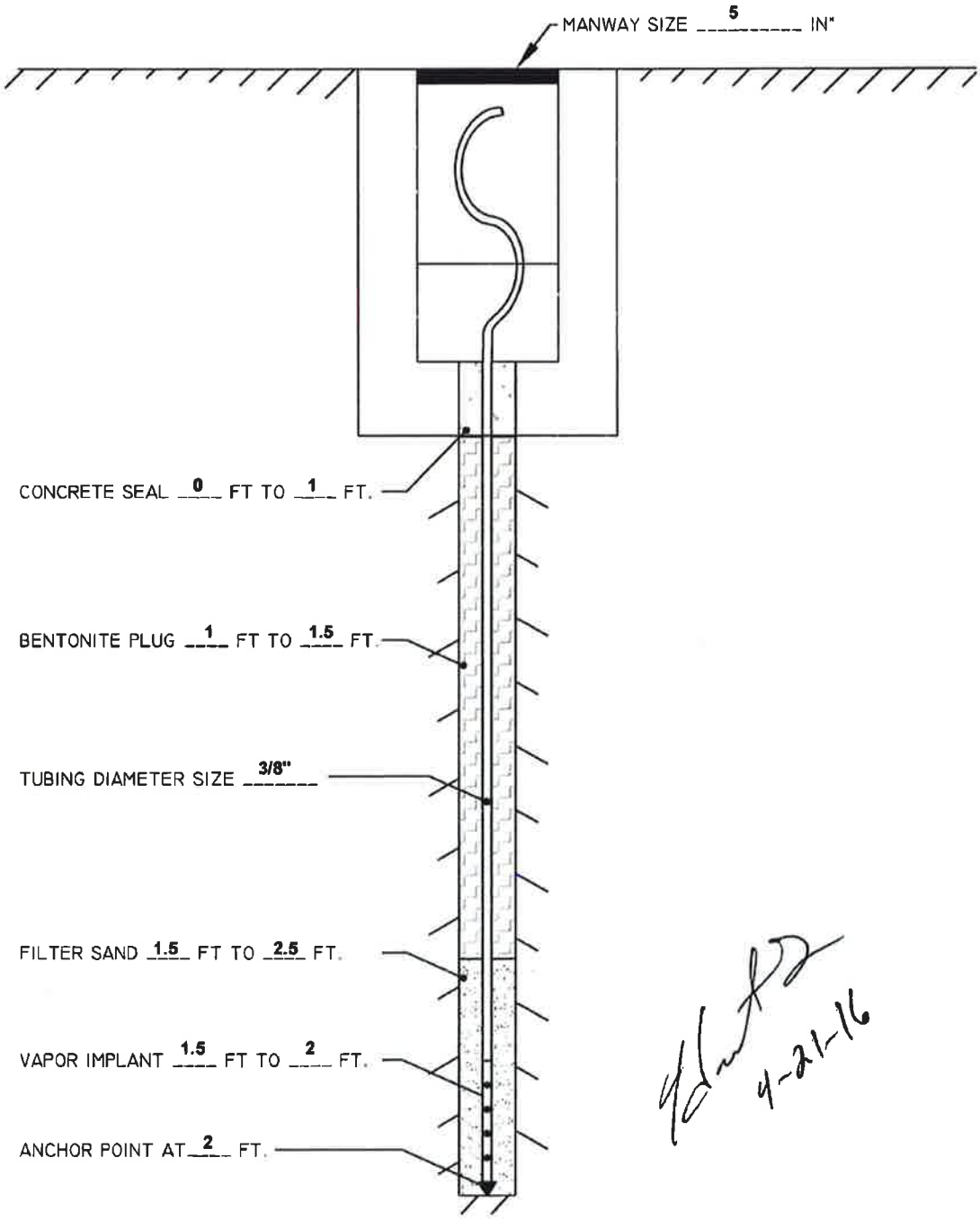
WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-14-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0				
		0	0 - 1' - CONCRETE: MIXED WITH ASPHALT.	
	VP-1 (2')	375	1 - 5' - SANDY CLAY (CLS): BLACK; SOFT; DAMP; STAINING AND ODOR; 3 - WOOD SHAVINGS AND CHIPS PRESENT; SATURATED AT 3' BGS.	
		394		
		316		
5		0	5' - TERMINATED AT 5' BGS.	
10				
15				
20				
25				
30				
35				

4-21-16

CLIENT Cook's County Store
PROJECT NO. 4547.15.01
SITE/LOCATION Robertsadale, PA
DATE 04-15-2016
WEATHER Clear/50's

WELL ID VP-1 ASSOCIATED BORING NO. VP-1
TERMINATION DEPTH 2' REFUSAL DEPTH
MRLLC PERSONNEL Hunter Lohr
DRILLER Matt Snyder/Damion Cannistraci
BORE HOLE DIAMETER 2.25"



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VAPOR IMPLANT CONSTRUCTION LOG

H:\DRAFTING\ACAD LT\Log Templates\Field Logs\VP Construction Diagram.dwg

MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **VP-2**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 5' BGS.
SATURATED ZONE: 3' BGS.

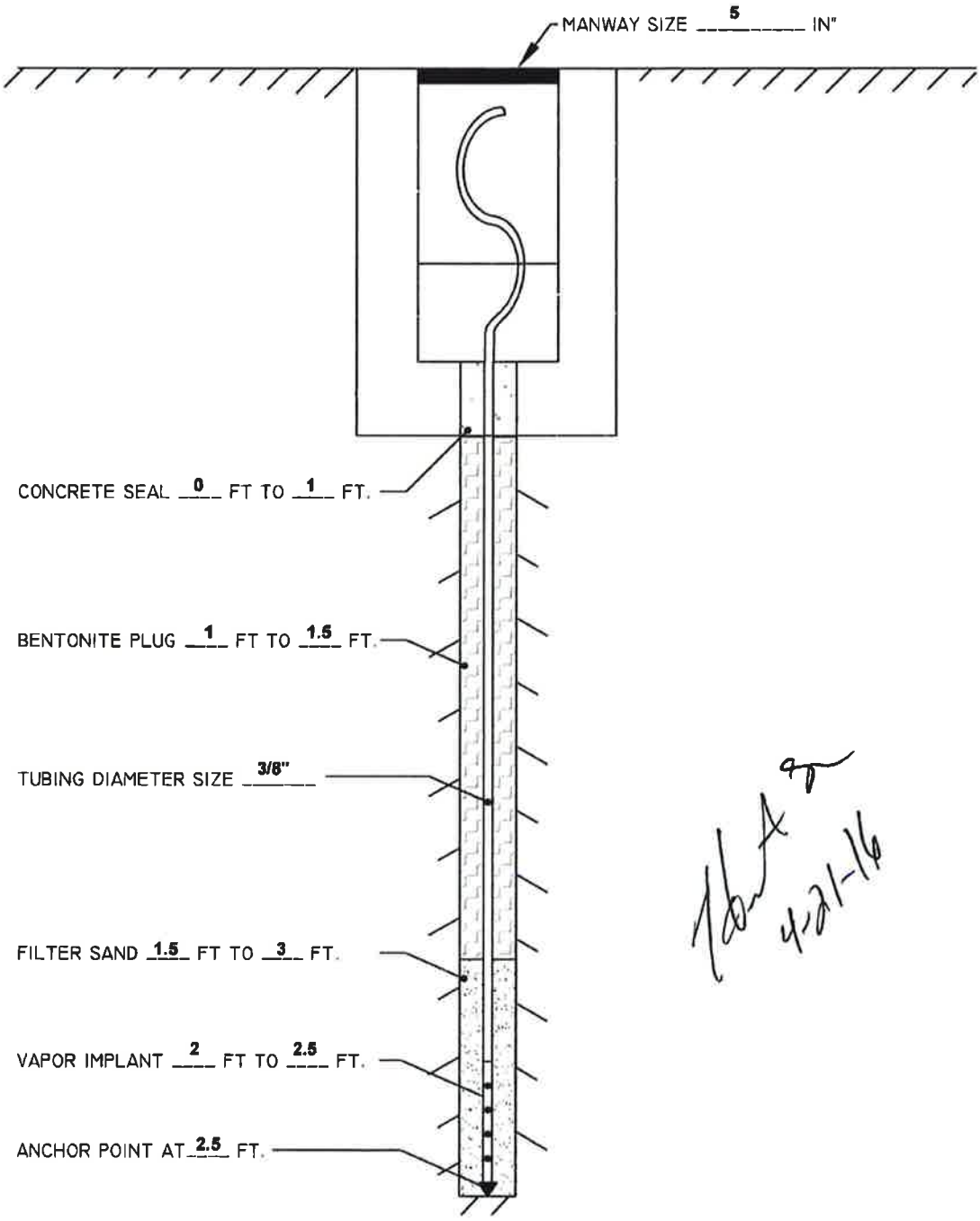
WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-14-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0			0 - 1' - CONCRETE: MIXED WITH ASPHALT FILL.	
	VP-2 (2')	26.4 506 0 0 0	1 - 5' - SANDY LOAM (SW): BLACK/BROWN; FINE; SOFT; DRY; SATURATED AT 3' BGS - WATER POURING INTO BOTTOM OF HOLE.	
5			5' - TERMINATED AT 5' BGS.	
10				
15				
20				
25				
30				
35				

4-21-16

CLIENT Cook's County Store
PROJECT NO. 4547.15.01
SITE/LOCATION Robertsadale, PA
DATE 04-15-2016
WEATHER Clear/50's

WELL ID VP-2 ASSOCIATED BORING NO. VP-2
TERMINATION DEPTH 2.5' REFUSAL DEPTH
MRLLC PERSONNEL Hunter Lohr
DRILLER Matt Snyder/Damion Cannistraci
BORE HOLE DIAMETER 2.25"



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MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: VP-3/SB-25

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 5' BGS.
SATURATED ZONE: N/A

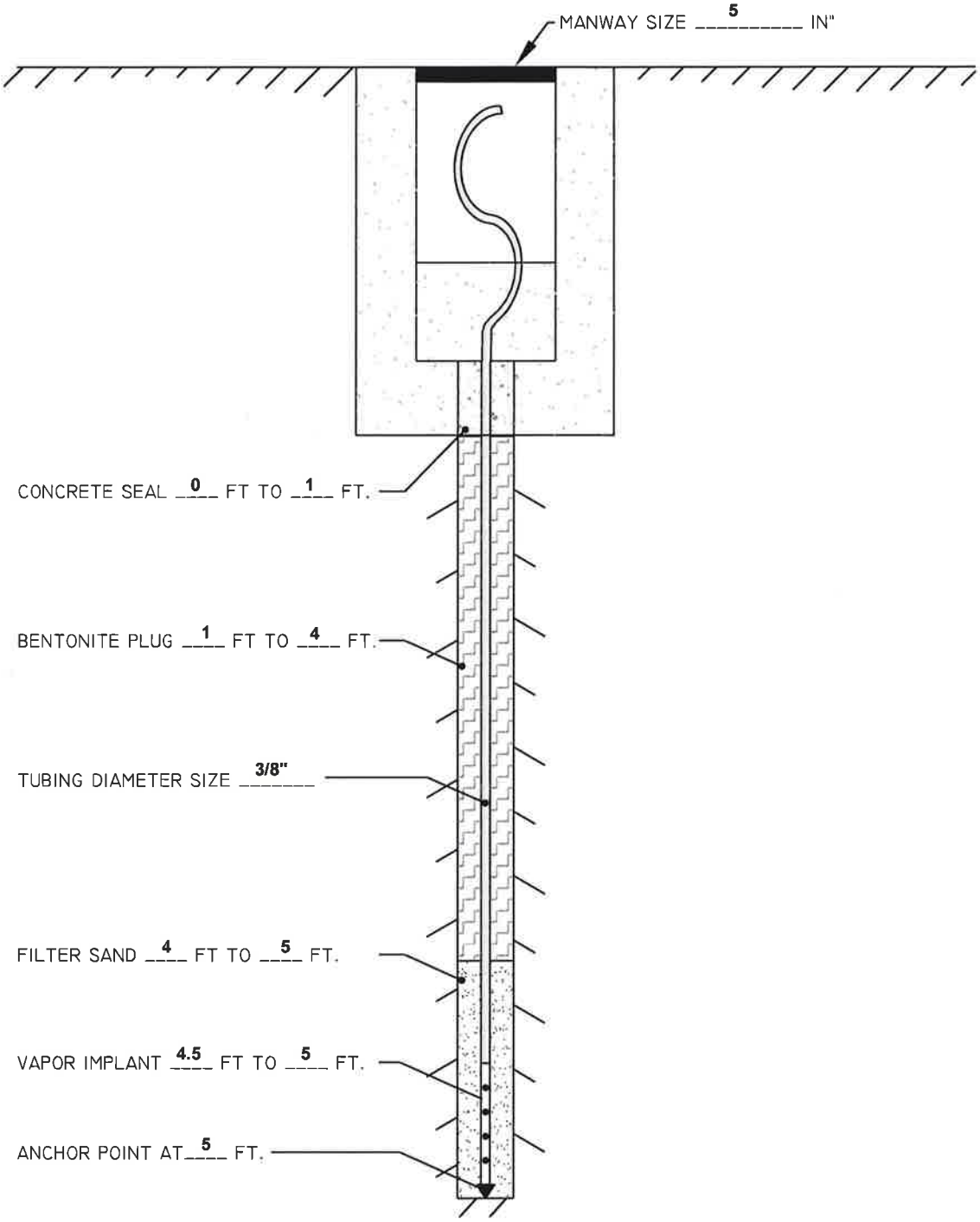
WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: DIRECT PUSH
OPERATOR: HUNTER LOHR
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-20-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	VP-3/SB-25 (1')	0	0 - 2' - TOPSOIL.	
		0		
		0	2 - 5' - SAND (SW): BROWN SANDY LOAM - FINE, DRY.	
		0		
		0		
5			5' - TERMINATED AT 5' BGS.	
10				
15				
20				
25				
30				
35				

8-2-16

CLIENT Cook's County Store
PROJECT NO. 4547.15.01
SITE/LOCATION Robertsadale, PA
DATE 04-20-2016
WEATHER Clear/50's

WELL ID VP-3/SB-25 ASSOCIATED BORING NO. VP-3/SB-25
TERMINATION DEPTH 2' REFUSAL DEPTH
MRLLC PERSONNEL Hunter Lohr
DRILLER Dave Bennett/Damion Cannistraci
BORE HOLE DIAMETER 2.25"



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MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **VP-4**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 4' BGS.
SATURATED ZONE: 4' BGS.

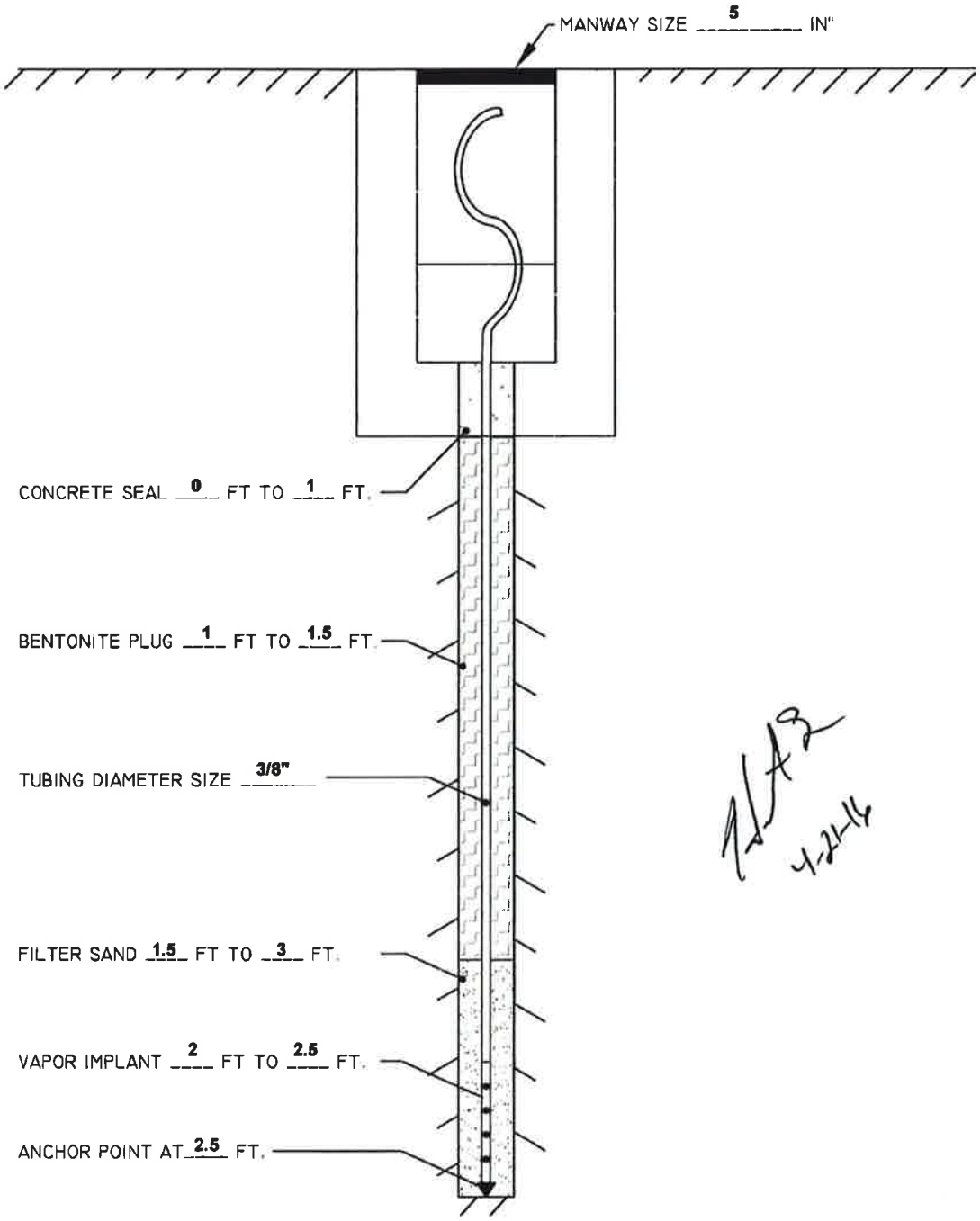
WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-14-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	VP-4 (3')	0	0 - 4' - TOPSOIL: MIXED WITH COBBLESTONES THROUGHOUT.	
		0		
		0		
		0		
5			4' - TERMINATED AT 4' BGS - SATURATED, WATER GUSHING INTO HOLE.	
10				
15				
20				
25				
30				
35				

4-21-16

CLIENT Cook's County Store
PROJECT NO. 4547.15.01
SITE/LOCATION Robertsadale, PA
DATE 04-15-2016
WEATHER Clear/50's

WELL ID VP-4 ASSOCIATED BORING NO. VP-4
TERMINATION DEPTH 2.5' REFUSAL DEPTH
MRLLC PERSONNEL Hunter Lohr
DRILLER Matt Snyder/Damion Cannistraci
BORE HOLE DIAMETER 2.25"



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MOUNTAIN RESEARCH, LLC
SOIL BORING LOG

BORING NO.: **VP-5**

PROJECT NO.: 4547.15.01
PROJECT NAME: SOIL BORING/MW INSTALLATION
CLIENT: COOK'S COUNTRY STORE
LOCATION: ROBERTSDALE, PA
DEPTH: TERMINATED AT 4' BGS.
SATURATED ZONE: 4' BGS.

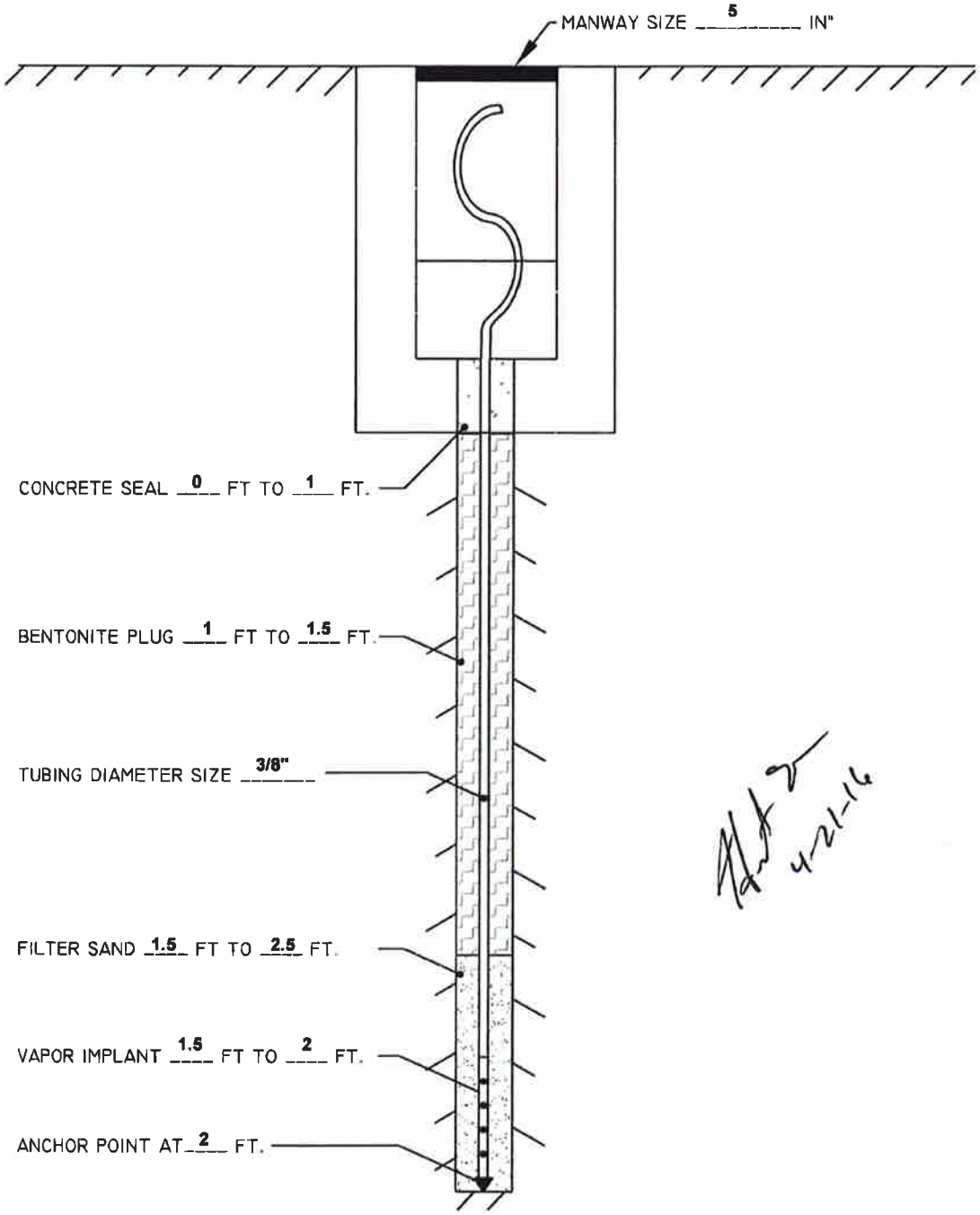
WEATHER: CLEAR/50'S
LOGGED BY: HUNTER LOHR
DRILLING METHOD: SOFT DIG/DIRECT PUSH
OPERATOR: MATT SNYDER/DAMION CANNISTRACI
BOREHOLE COMPLETION: VAPOR POINT
DATE: 4-14-2016
BOREHOLE DIAMETER: 2.25"

DEPTH SCALE	SAMPLE NO.	PID (PPM)	LITHOLOGY DESCRIPTION	GRAPHIC LOG
0	VP-5 (3')	0 0 0 0	0 - 4' - TOPSOIL: TOPSOIL AND COBBLESTONES THROUGHOUT; SATURATED AT 4' BGS.	
5			4' - TERMINATED AT 4' BGS.	
10				
15				
20				
25				
30				
35				

4-21-16

CLIENT Cook's County Store
PROJECT NO. 4547.15.01
SITE/LOCATION Robertsadale, PA
DATE 04-15-2016
WEATHER Clear/50's

WELL ID VP-5 ASSOCIATED BORING NO. VP-5
TERMINATION DEPTH 2' REFUSAL DEPTH
MRLLC PERSONNEL Hunter Lohr
DRILLER Matt Snyder/Damion Cannistraci
BORE HOLE DIAMETER 2.25"



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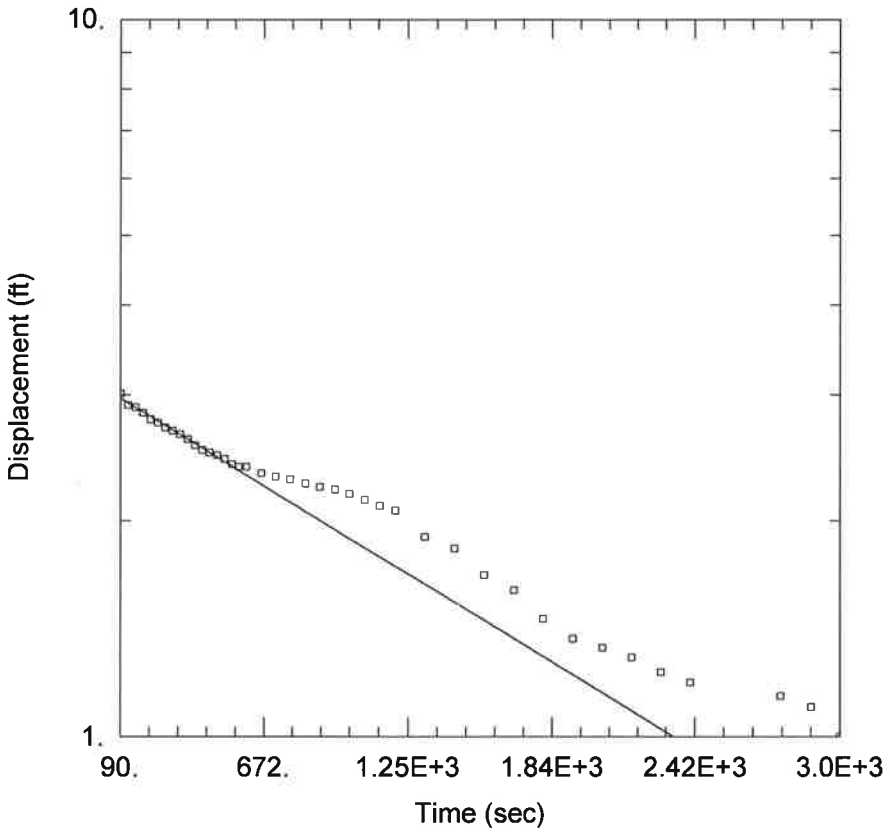
APPENDIX E

RW-1 RECHARGE ANALYSIS



RW-1 GROUNDWATER RECOVERY ANALYSIS

Data Set: \...\RW-1 Rising Head Test.aqt
Date: 08/03/16 Time: 19:50:23

PROJECT INFORMATION

Company: Mountain Research
Client: Cook's Country Store
Project: 4547.15.01
Location: Robertsdale, PA
Test Well: RW-1
Test Date: 06/14/2016

AQUIFER DATA

Saturated Thickness: 11.45 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RW-1)

Initial Displacement: 4.11 ft
Total Well Penetration Depth: 6.45 ft
Casing Radius: 0.1666 ft
Static Water Column Height: 6.45 ft
Screen Length: 6.5 ft
Wellbore Radius: 0.4271 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1522 ft/day
y0 = 3.093 ft

APPENDIX F

LABORATORY ANALYTICAL DATA REPORTS

MOUNTAIN RESEARCH, LLC

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PADEP #07-00418
EPA Lab #PA00165

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814.371.6030 Phone
814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

05 February 2016

Lab ID #: 1602055

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 02/02/16 14:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Trip Blank	1602055-01	Aqueous	Grab	02/02/16 07:45	02/02/16 14:45
MW-1	1602055-02	Aqueous	Grab	02/02/16 12:20	02/02/16 14:45
MW-2	1602055-03	Aqueous	Grab	02/02/16 11:28	02/02/16 14:45
MW-3	1602055-04	Aqueous	Grab	02/02/16 12:05	02/02/16 14:45
MW-4	1602055-05	Aqueous	Grab	02/02/16 11:40	02/02/16 14:45
MW-5	1602055-06	Aqueous	Grab	02/02/16 13:00	02/02/16 14:45
MW-6	1602055-07	Aqueous	Grab	02/02/16 12:45	02/02/16 14:45
MW-7	1602055-08	Aqueous	Grab	02/02/16 12:31	02/02/16 14:45
MW-8	1602055-09	Aqueous	Grab	02/02/16 11:18	02/02/16 14:45
Duplicate	1602055-10	Aqueous	Grab	02/02/16 12:20	02/02/16 14:45

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

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DuBois Office and Laboratory
110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

Trip Blank

1602055-01 (Aqueous) Sampled: 02/02/16 07:45

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.770	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.666	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 01:19	02/03/16 01:19	EPA 8260 B	A	JMG	Calc

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Tegan Schott

Tegan Schott, Technical Specialist II

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110 McCracken Run Road
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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-1

1602055-02 (Aqueous) Sampled: 02/02/16 12:20

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**1720**	500	192	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**468**	10.0	3.63	NA	µg/L	02/03/16 06:33	02/03/16 06:33	EPA 8260 B	A	JMG	D1
Benzene	**4090**	500	166	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
Ethylbenzene	**1280**	500	180	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**59.6**	10.0	2.80	NA	µg/L	02/03/16 06:33	02/03/16 06:33	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	2.79	NA	µg/L	02/03/16 06:33	02/03/16 06:33	EPA 8260 B	A	JMG	D1
Naphthalene	**323**	10.0	1.76	NA	µg/L	02/03/16 06:33	02/03/16 06:33	EPA 8260 B	A	JMG	D1
Toluene	**13000**	500	186	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
Xylene o	**1910**	500	164	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
Xylene p/m	**5380**	1000	323	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	D1
Xylenes, Total	**7290**	1500	NA	NA	µg/L	02/03/16 06:33	02/03/16 06:59	EPA 8260 B	A	JMG	Calc, D1

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Tegan Schott

Tegan Schott, Technical Specialist II

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-2

1602055-03 (Aqueous) Sampled: 02/02/16 11:28

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**229**	10.0	3.85	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**70.2**	10.0	3.63	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Benzene	**1190**	50.0	16.6	NA	µg/L	02/03/16 04:48	02/03/16 05:14	EPA 8260 B	A	JMG	D1
Ethylbenzene	**200**	10.0	3.60	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**36.8**	10.0	2.80	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	2.79	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Naphthalene	**41.4**	10.0	1.76	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Toluene	**46.2**	10.0	3.73	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Xylene o	**34.7**	10.0	3.28	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	D1
Xylene p/m	**1150**	100	32.3	NA	µg/L	02/03/16 04:48	02/03/16 05:14	EPA 8260 B	A	JMG	D1
Xylenes, Total	**1180**	110	NA	NA	µg/L	02/03/16 04:48	02/03/16 04:48	EPA 8260 B	A	JMG	Calc, D1

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Tegan Schott

Tegan Schott, Technical Specialist II

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-3

1602055-04 (Aqueous) Sampled: 02/02/16 12:05

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**240**	10.0	3.85	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**71.6**	10.0	3.63	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Benzene	**1290**	50.0	16.6	NA	µg/L	02/03/16 03:56	02/03/16 04:22	EPA 8260 B	A	JMG	D1
Ethylbenzene	**269**	10.0	3.60	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**20.3**	10.0	2.80	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	2.79	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Naphthalene	**62.4**	10.0	1.76	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Toluene	**1390**	50.0	18.6	NA	µg/L	02/03/16 03:56	02/03/16 04:22	EPA 8260 B	A	JMG	D1
Xylene o	**199**	10.0	3.28	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Xylene p/m	**642**	20.0	6.46	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	D1
Xylenes, Total	**842**	30.0	NA	NA	µg/L	02/03/16 03:56	02/03/16 03:56	EPA 8260 B	A	JMG	Calc, D1

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-4

1602055-05 (Aqueous) Sampled: 02/02/16 11:40

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**2.15**	2.00	0.770	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.666	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 03:29	02/03/16 03:29	EPA 8260 B	A	JMG	Calc

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-5

1602055-06 (Aqueous) Sampled: 02/02/16 13:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.770	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Benzene	**8.43**	2.00	0.666	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 03:03	02/03/16 03:03	EPA 8260 B	A	JMG	Calc

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-6

1602055-07 (Aqueous) Sampled: 02/02/16 12:45

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.770	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Benzene	**16.7**	2.00	0.666	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 02:37	02/03/16 02:37	EPA 8260 B	A	JMG	Calc

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-7

1602055-08 (Aqueous) Sampled: 02/02/16 12:31

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**15.8**	2.00	0.770	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	**2.04**	2.00	0.726	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Benzene	**9.85**	2.00	0.666	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Ethylbenzene	**6.10**	2.00	0.719	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**7.96**	2.00	0.561	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 02:11	02/03/16 02:11	EPA 8260 B	A	JMG	Calc

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

MW-8

1602055-09 (Aqueous) Sampled: 02/02/16 11:18

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.770	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.666	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 01:45	02/03/16 01:45	EPA 8260 B	A	JMG	Calc

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

Duplicate

1602055-10 (Aqueous) Sampled: 02/02/16 12:20

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**1500**	500	192	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**475**	10.0	3.63	NA	µg/L	02/03/16 05:40	02/03/16 05:40	EPA 8260 B	A	JMG	D1
Benzene	**3420**	500	166	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
Ethylbenzene	**1080**	500	180	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**63.2**	10.0	2.80	NA	µg/L	02/03/16 05:40	02/03/16 05:40	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	2.79	NA	µg/L	02/03/16 05:40	02/03/16 05:40	EPA 8260 B	A	JMG	D1
Naphthalene	**323**	10.0	1.76	NA	µg/L	02/03/16 05:40	02/03/16 05:40	EPA 8260 B	A	JMG	D1
Toluene	**10300**	500	186	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
Xylene o	**1530**	500	164	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
Xylene p/m	**4380**	1000	323	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	D1
Xylenes, Total	**5910**	1500	NA	NA	µg/L	02/03/16 05:40	02/03/16 06:07	EPA 8260 B	A	JMG	Calc, D1

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602055
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:26

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2016
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

D1	This sample was analyzed at a dilution.
Calc	[Calc] - Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Mountain Research, LLC

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Tegan Schott

Tegan Schott, Technical Specialist II

Billing Group:	Phase:	PROJECT NAME
—	GW	Grand water

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale PA

CLIENT: Cooks Country Store

SAMPLER(S): LM / MC

NOTES:

Received On Ice: (Y) / N

Sample Temp: 5.2

PWSID #:

Comments:

MOUNTAIN RESEARCH LI

825 25th Street, Altoona, PA 16601 (814) 9

110 McCracken Run Road, Dubois, PA 15801 (814) 3

CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day —
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Preserve	LAB NUMBER
Trip Blank	02/02/2016	7:45	X		AQ	2 40ml VOAS	2A	X	HCl	01
MW-1		12:20								02
MW-2		11:28								03
MW-3		12:05								04
MW-4		11:40								05
MW-5		13:00								06
MW-6		12:45								07
MW-7		12:31								08
MW-8		11:18								09
Duplicate		12:20								10

Analyses Requested

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[signature]	02/02/16	14:45	[signature]	02/02/16 14:45	1602055
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:

Log In Time: 1305

Staff: KL

Date: 2/3/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1602055

CLIENT: COOK COUNTY Stree

DATE SAMPLED: 2/2/16 DATE RECEIVED: 2/2/16 TIME RECEIVED: 14:45

MOUNTAIN RESEARCH, LLC

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 18

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 5.2 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: _____ CLIENT SPOKEN TO: _____ DATE/TIME: _____

OUTCOME: _____

SIGNATURE: K Dekoe

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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EPA Lab #PA00165

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

05 February 2016

Lab ID #: 1602056

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 02/02/16 14:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602056
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Post GAC	1602056-01	Aqueous	Grab	02/02/16 12:46	02/02/16 14:45

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1602056
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	02/05/16 15:28

Post GAC

1602056-01 (Aqueous) Sampled: 02/02/16 12:46

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.770	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.726	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.666	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	X
Ethylbenzene	<2.00	2.00	0.719	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.561	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.558	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	0.353	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.746	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	Xa
Xylene o	<2.00	2.00	0.656	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	1.29	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	02/03/16 00:53	02/03/16 00:53	EPA 8260 B	A	JMG	Calc

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Tegan Schott

Tegan Schott, Technical Specialist II

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814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1602056 **Reported:** 02/05/16 15:28

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2016
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

Xa	Toluene exceeded Duplicate criteria.
X	Benzene exceeded Duplicate criteria.
Calc	[Calc] - Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Mountain Research, LLC

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Tegan Schott

Tegan Schott, Technical Specialist II

Billing Group:	Phase:	PROJECT NAME
—	GW	Ground Water

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale PA

CLIENT: Cooks Country Store

SAMPLER(S): LM/MC

NOTES:

Received On Ice: (Y) / N

Sample Temp: 5.2

PWSID #:

Comments:

MOUNTAIN RESEARCH L

825 25th Street, Altoona, PA 16601 (814)

110 McCracken Run Road, Dubois, PA 15801 (814)

CHAIN OF CUSTODY RECORD

Analyses Requested

MR PROJ. MGR.

Shipping Carrier: MC

Turn Around Time:
10 Day —
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Preserve	LAB NUMBER
Post GAC	02/02/2016	12:46	X		AQ	2 40ml VOAs	ZA	X	HCl	9

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[signature]	02/02/16	14:45	[signature]	02/02/16 14:45	1602056
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:

Log In Time: 13:10

Staff: KC

Date: 2/3/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1602056

CLIENT: Cook's Country Store

DATE SAMPLED: 2/2/16 DATE RECEIVED: 2/2/16 TIME RECEIVED: 1445

MOUNTAIN RESEARCH LLC

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 2

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 5.2 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

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PADEP #33-00258
EPA Lab #PA00155

25 April 2016

Lab ID #: 1604293

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 04/15/16 13:22. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
VP-1 (2') US	1604293-01	Soil	Grab	04/14/16 08:56	04/15/16 13:22
VP-2 (2') US	1604293-02	Soil	Grab	04/14/16 09:15	04/15/16 13:22
VP-3 (1') US	1604293-03	Soil	Grab	04/14/16 09:32	04/15/16 13:22
MW-10 (2') US	1604293-04	Soil	Grab	04/14/16 11:26	04/15/16 13:22
VP-4 (3') US	1604293-05	Soil	Grab	04/14/16 12:18	04/15/16 13:22
VP-5 (3') US	1604293-06	Soil	Grab	04/14/16 12:24	04/15/16 13:22
SB-26 (2') US	1604293-07	Soil	Grab	04/14/16 13:30	04/15/16 13:22
SB-27 (2') US	1604293-08	Soil	Grab	04/14/16 13:42	04/15/16 13:22
SB-28 (2') US	1604293-09	Soil	Grab	04/14/16 14:15	04/15/16 13:22
MW-1D (2') US	1604293-10	Soil	Grab	04/14/16 13:55	04/15/16 13:22
SB-24 (1') US	1604293-11	Soil	Grab	04/15/16 07:26	04/15/16 13:22
MW-9 (2') US	1604293-12	Soil	Grab	04/15/16 07:43	04/15/16 13:22
SB-23 (3') US	1604293-13	Soil	Grab	04/15/16 08:06	04/15/16 13:22
MW-11 (2') US	1604293-14	Soil	Grab	04/15/16 08:52	04/15/16 13:22
SB-29 (1') US	1604293-15	Soil	Grab	04/15/16 09:45	04/15/16 13:22
MW-12 (1') US	1604293-16	Soil	Grab	04/15/16 10:16	04/15/16 13:22
SB-31 (4') US	1604293-17	Soil	Grab	04/15/16 10:48	04/15/16 13:22
SB-30 (1') US	1604293-18	Soil	Grab	04/15/16 11:15	04/15/16 13:22

Mountain Research, LLC

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Tegan Schott

Tegan Schott, Technical Specialist II

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DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

VP-1 (2') US

1604293-01 (Soil) Sampled: 04/14/16 08:56

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**78.9**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**110000**	12700	1520	NA	µg/Kg dry	04/19/16 15:38	04/20/16 14:39	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**49400**	2540	266	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Benzene	**3990**	2540	330	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Ethylbenzene	**45000**	2540	266	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**10800**	2540	216	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
MTBE	<2540	2540	317	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Naphthalene	**26700**	2540	659	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Toluene	<2540	2540	292	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Xylene o	**4890**	2540	418	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Xylene p/m	**169000**	5070	672	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	D1
Xylenes, Total	**174000**	7610	NA	NA	µg/Kg dry	04/19/16 15:38	04/19/16 15:38	EPA 8260 B	A	JMG	CC, D1

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Tegan Schott, Technical Specialist II

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

VP-2 (2') US

1604293-02 (Soil) Sampled: 04/14/16 09:15

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**75.8**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**14400**	2640	317	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**7270**	2640	277	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Benzene	<2640	2640	343	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Ethylbenzene	**4990**	2640	277	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	<2640	2640	224	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
MTBE	<2640	2640	330	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Naphthalene	<2640	2640	686	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Toluene	<2640	2640	303	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Xylene o	<2640	2640	435	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Xylene p/m	**16000**	5280	699	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	D1
Xylenes, Total	**16000**	7920	NA	NA	µg/Kg dry	04/19/16 16:04	04/19/16 16:04	EPA 8260 B	A	JMG	CC, D1

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Tegan Schott, Technical Specialist II

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

VP-3 (1') US

1604293-03 (Soil) Sampled: 04/14/16 09:32

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**82.9**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**344000**	12100	1450	NA	µg/Kg dry	04/19/16 16:30	04/20/16 15:05	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**148000**	12100	1270	NA	µg/Kg dry	04/19/16 16:30	04/20/16 15:05	EPA 8260 B	A	JMG	D1
Benzene	<2410	2410	314	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Ethylbenzene	**8380**	2410	253	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**3960**	2410	205	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
MTBE	<2410	2410	302	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Naphthalene	**34300**	2410	627	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Toluene	<2410	2410	277	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Xylene o	<2410	2410	398	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Xylene p/m	**119000**	4830	639	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	D1
Xylenes, Total	**119000**	7240	NA	NA	µg/Kg dry	04/19/16 16:30	04/19/16 16:30	EPA 8260 B	A	JMG	CC, D1

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Tegan Schott

Tegan Schott, Technical Specialist II

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

MW-10 (2') US

1604293-04 (Soil) Sampled: 04/14/16 11:26

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**88.7**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<225	225	27.1	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<225	225	23.7	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Benzene	<225	225	29.3	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Ethylbenzene	<225	225	23.7	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<225	225	19.2	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
MTBE	<225	225	28.2	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Naphthalene	<225	225	58.6	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Toluene	<225	225	25.9	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Xylene o	<225	225	37.2	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Xylene p/m	<451	451	59.7	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	
Xylenes, Total	<676	676	NA	NA	µg/Kg dry	04/19/16 16:56	04/19/16 16:56	EPA 8260 B	A	JMG	CC

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Tegan Schott

Tegan Schott, Technical Specialist II

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

VP-4 (3') US

1604293-05 (Soil) Sampled: 04/14/16 12:18

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**88.7**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<226	226	27.1	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<226	226	23.7	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Benzene	<226	226	29.3	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Ethylbenzene	<226	226	23.7	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<226	226	19.2	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
MTBE	<226	226	28.2	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Naphthalene	<226	226	58.7	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Toluene	<226	226	25.9	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Xylene o	<226	226	37.2	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Xylene p/m	<451	451	59.8	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	
Xylenes, Total	<677	677	NA	NA	µg/Kg dry	04/19/16 17:23	04/19/16 17:23	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

VP-5 (3') US

1604293-06 (Soil) Sampled: 04/14/16 12:24

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**82.8**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<242	242	29.0	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<242	242	25.4	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Benzene	<242	242	31.4	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Ethylbenzene	<242	242	25.4	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<242	242	20.5	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
MTBE	<242	242	30.2	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Naphthalene	<242	242	62.8	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Toluene	<242	242	27.8	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Xylene o	<242	242	39.9	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Xylene p/m	<483	483	64.0	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	
Xylenes, Total	<725	725	NA	NA	µg/Kg dry	04/19/16 17:49	04/19/16 17:49	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-26 (2') US

1604293-07 (Soil) Sampled: 04/14/16 13:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**84.6**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**1900**	237	28.4	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	**438**	237	24.8	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Benzene	**953**	237	30.7	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Ethylbenzene	**1240**	237	24.8	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**465**	237	20.1	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
MTBE	<237	237	29.6	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Naphthalene	**516**	237	61.5	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Toluene	**913**	237	27.2	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Xylene o	**266**	237	39.0	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Xylene p/m	**4020**	473	62.7	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	
Xylenes, Total	**4280**	710	NA	NA	µg/Kg dry	04/19/16 18:15	04/19/16 18:15	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-27 (2') US

1604293-08 (Soil) Sampled: 04/14/16 13:42

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**85.6**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**20300**	2340	280	NA	µg/Kg dry	04/19/16 18:41	04/20/16 15:31	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**9410**	234	24.5	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Benzene	**1040**	234	30.4	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Ethylbenzene	**6000**	234	24.5	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**2450**	234	19.9	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
MTBE	<234	234	29.2	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Naphthalene	**4000**	234	60.7	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Toluene	**736**	234	26.9	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Xylene o	**306**	234	38.5	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Xylene p/m	**19100**	467	61.9	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	
Xylenes, Total	**19400**	701	NA	NA	µg/Kg dry	04/19/16 18:41	04/19/16 18:41	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 04/25/16 15:22
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

SB-28 (2') US

1604293-09 (Soil) Sampled: 04/14/16 14:15

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**88.2**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**6030**	2270	272	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	<2270	2270	238	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Benzene	<2270	2270	295	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Ethylbenzene	**3150**	2270	238	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	<2270	2270	193	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
MTBE	<2270	2270	283	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Naphthalene	**4130**	2270	589	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Toluene	<2270	2270	261	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Xylene o	<2270	2270	374	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Xylene p/m	**9040**	4530	601	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	D1
Xylenes, Total	**9040**	6800	NA	NA	µg/Kg dry	04/19/16 19:07	04/19/16 19:07	EPA 8260 B	A	JMG	CC, D1

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

MW-1D (2') US

1604293-10 (Soil) Sampled: 04/14/16 13:55

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**84.7**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**563000**	23600	2830	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**176000**	23600	2480	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
Benzene	**20500**	2360	307	NA	µg/Kg dry	04/19/16 19:33	04/19/16 19:33	EPA 8260 B	A	JMG	D1
Ethylbenzene	**294000**	23600	2480	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**38500**	2360	201	NA	µg/Kg dry	04/19/16 19:33	04/19/16 19:33	EPA 8260 B	A	JMG	D1
MTBE	<2360	2360	295	NA	µg/Kg dry	04/19/16 19:33	04/19/16 19:33	EPA 8260 B	A	JMG	D1
Naphthalene	**82800**	2360	614	NA	µg/Kg dry	04/19/16 19:33	04/19/16 19:33	EPA 8260 B	A	JMG	D1
Toluene	**662000**	23600	2720	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
Xylene o	**445000**	23600	3900	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
Xylene p/m	**1140000**	47200	6260	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	D1
Xylenes, Total	**1580000**	70900	NA	NA	µg/Kg dry	04/19/16 19:33	04/20/16 15:57	EPA 8260 B	A	JMG	CC, D1

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-24 (1') US

1604293-11 (Soil) Sampled: 04/15/16 07:26

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**86.3**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<232	232	27.8	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<232	232	24.3	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Benzene	<232	232	30.1	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Ethylbenzene	<232	232	24.3	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<232	232	19.7	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
MTBE	<232	232	29.0	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Naphthalene	<232	232	60.3	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Toluene	<232	232	26.7	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Xylene o	<232	232	38.2	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Xylene p/m	<464	464	61.4	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	
Xylenes, Total	<695	695	NA	NA	µg/Kg dry	04/20/16 12:55	04/20/16 12:55	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

MW-9 (2') US

1604293-12 (Soil) Sampled: 04/15/16 07:43

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**88.6**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<226	226	27.1	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<226	226	23.7	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Benzene	<226	226	29.3	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Ethylbenzene	<226	226	23.7	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<226	226	19.2	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
MTBE	<226	226	28.2	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Naphthalene	<226	226	58.7	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Toluene	<226	226	25.9	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Xylene o	<226	226	37.2	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Xylene p/m	<451	451	59.8	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	
Xylenes, Total	<677	677	NA	NA	µg/Kg dry	04/19/16 20:25	04/19/16 20:25	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-23 (3') US

1604293-13 (Soil) Sampled: 04/15/16 08:06

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**81.6**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<245	245	29.4	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<245	245	25.7	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Benzene	<245	245	31.9	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Ethylbenzene	<245	245	25.7	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<245	245	20.8	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
MTBE	<245	245	30.6	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Naphthalene	<245	245	63.7	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Toluene	<245	245	28.2	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Xylene o	<245	245	40.4	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Xylene p/m	<490	490	65.0	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	
Xylenes, Total	<735	735	NA	NA	µg/Kg dry	04/19/16 20:51	04/19/16 20:51	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 04/25/16 15:22
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

MW-11 (2') US

1604293-14 (Soil) Sampled: 04/15/16 08:52

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**77.4**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<258	258	31.0	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<258	258	27.1	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Benzene	<258	258	33.6	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Ethylbenzene	<258	258	27.1	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<258	258	22.0	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
MTBE	<258	258	32.3	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Naphthalene	<258	258	67.2	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Toluene	<258	258	29.7	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Xylene o	<258	258	42.6	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Xylene p/m	<517	517	68.5	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	
Xylenes, Total	<775	775	NA	NA	µg/Kg dry	04/20/16 16:23	04/20/16 16:23	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-29 (1') US

1604293-15 (Soil) Sampled: 04/15/16 09:45

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**85.1**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**132000**	11700	1410	NA	µg/Kg dry	04/20/16 16:49	04/21/16 16:19	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**41500**	235	24.7	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Benzene	<235	235	30.5	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Ethylbenzene	**25600**	235	24.7	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**7360**	235	20.0	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
MTBE	<235	235	29.4	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Naphthalene	**18600**	235	61.1	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Toluene	**401**	235	27.0	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Xylene o	**2070**	235	38.8	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Xylene p/m	**54800**	470	62.3	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	
Xylenes, Total	**56800**	705	NA	NA	µg/Kg dry	04/20/16 16:49	04/20/16 16:49	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

MW-12 (1') US

1604293-16 (Soil) Sampled: 04/15/16 10:16

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**79.6**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<251	251	30.2	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<251	251	26.4	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Benzene	<251	251	32.7	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Ethylbenzene	<251	251	26.4	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<251	251	21.4	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
MTBE	<251	251	31.4	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Naphthalene	<251	251	65.4	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Toluene	<251	251	28.9	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Xylene o	<251	251	41.5	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Xylene p/m	<503	503	66.6	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	
Xylenes, Total	<754	754	NA	NA	µg/Kg dry	04/20/16 17:15	04/20/16 17:15	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-31 (4') US

1604293-17 (Soil) Sampled: 04/15/16 10:48

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**83.3**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<240	240	28.8	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<240	240	25.2	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Benzene	<240	240	31.2	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Ethylbenzene	<240	240	25.2	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<240	240	20.4	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
MTBE	<240	240	30.0	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Naphthalene	<240	240	62.4	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Toluene	<240	240	27.6	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Xylene o	<240	240	39.6	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Xylene p/m	<480	480	63.6	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	
Xylenes, Total	<720	720	NA	NA	µg/Kg dry	04/20/16 17:41	04/20/16 17:41	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

SB-30 (1') US

1604293-18 (Soil) Sampled: 04/15/16 11:15

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**85.7**	0.100	NA	NA	wt%	04/18/16 10:25	04/18/16 10:25	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**893**	233	28.0	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	**257**	233	24.5	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Benzene	<233	233	30.3	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Ethylbenzene	**299**	233	24.5	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<233	233	19.8	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
MTBE	<233	233	29.2	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Naphthalene	<233	233	60.7	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Toluene	**246**	233	26.8	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Xylene o	<233	233	38.5	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Xylene p/m	**1120**	467	61.9	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	
Xylenes, Total	**1120**	700	NA	NA	µg/Kg dry	04/20/16 18:07	04/20/16 18:07	EPA 8260 B	A	JMG	CC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604293
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:22

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

O1	The VOC vial contained an amount of soil outside the EPA recommendation
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Billing Group: | Phase: Soil Sampling

PROJECT NAME: Soil Samplers

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale, PA

CLIENT: Cooks Country Store

SAMPLER(S): HL

NOTES:

Received On Ice: Q / N

Sample Temp: 4.5°C

PWSID #:

Comments:

MOUNTAIN RESEARCH LI

825 25th Street, Altoona, PA 16601 (814) 9

110 McCracken Run Road, Dubois, PA 15801 (814) 3

CHAIN OF CUSTODY RECORI

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	% Solid	Preserve	LAB NUMBER
VP-1(2')US	4-14-16	0856	X		Soil	1-40ml VOA	2A	X		MeOH	01
↓	↓	↓	↓		↓	1-4oz jar	↓		X	None	↓
VP-2(2')US		0915				1-40ml VOA		X		MeOH	02
↓		↓				1-4oz jar			X	None	↓
VP-3(1')US		0932				1-40ml VOA		X		MeOH	03
↓		↓				1-4oz jar			X	None	↓
MW-10(2')US		1126				1-40ml VOA		X		MeOH	04
↓		↓				1-4oz jar			X	None	↓
VP-4(3')US		1218				1-40ml VOA		X		MeOH	05
↓		↓				1-4oz jar			X	None	↓
VP-5(3')US		1224				1-40ml VOA		X		MeOH	06
↓	↓	↓	↓		↓	1-4oz jar	↓		X	None	↓

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[illegible]	4-15-16	1322	[illegible]	4/15/16 13:22	1604293
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:
					JMK

Log In Time: 16:07

Staff: [illegible]

Date: 4/15/16

pg 1 of 3

Drilling Group: | Phase: Soil Sampling | PROJECT NAME: Soil Samples

MR Project #: 4547.15.01 | SITE LOCATION: Robertsdale, PA

CLIENT: Cooks Country Store | SAMPLER(S): HL

NOTES:

Received On Ice: Y / N

Sample Temp: 4.5°C

PWSID #:

Comments:

MOUNTAIN RESEARCH LLC

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(814) 371-6030 Fax (814) 375-0823

CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day ✓
3 Day
1 Day

Comments:

Analyses Requested

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	% Solid	Preserve	LAB NUMBER
SB-26(2')US	4-14-16	1330	X		Soil	1-40ml VOA	2A	X		MeOH	07
↓	↓	↓	↓		↓	1-4oz Jar	↓		X	None	↓
SB-27(2')US		1342				1-40ml VOA		X		MeOH	08
↓		↓				1-4oz Jar			X	None	↓
SB-28(2')US		~~1355~~ 1415				1-40ml VOA		X		MeOH	09
↓		↓				1-4oz Jar			X	None	↓
MW-10(2')US		1355				1-40ml VOA		X		MeOH	10
↓		↓				1-4oz Jar			X	None	↓
SB-24(1')US	4-15-16	0726				1-40ml VOA		X		MeOH	11
↓		↓				1-4oz Jar			X	None	↓
MW-9'(2')US		0743				1-40ml VOA		X		MeOH	12
↓		↓				1-4oz Jar			X	None	↓

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[signature]	4-15-16	1322	[signature]	4/15/16 13:22	1604293
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:
					JMK

Log In Time: 16:07
Staff: KC
Date: 4/15/16

Pg 2 of 3

Billing Group: | Phase: Soil Sampling | PROJECT NAME: Soil Samplings

MR Project #: 4547.15.01 | SITE LOCATION: Robertsdale PA

CLIENT: Cooks Country Store | SAMPLER(S): HL

NOTES:

Received On Ice: (Y) / N

Sample Temp: 4.5°C

PWSID #:

Comments:

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CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day
3 Day
1 Day

Comments:

Analyses Requested

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	% Solids	Preserve	LAB NUMBER
SB-23(3')US	4-15-16	0806	X		Soil	1-40ml VOA	2A	X		MeOH	13
↓		↓				1-4oz jar			X	None	↓
MW 11(2')US		0852				1-40ml VOA		X		MeOH	14
↓		↓				1-4oz jar			X	None	↓
SB-29(1')US		0945				1-40ml VOA		X		MeOH	15
↓		↓				1-4oz jar			X	None	↓
MW-12(1')US		1016				1-40ml VOA		X		MeOH	16
↓		↓				1-4oz jar			X	None	↓
SB-31(4')US		1048				1-40ml VOA		X		MeOH	17
↓		↓				1-4oz jar			X	None	↓
SB-30(1')US		1115				1-40ml VOA		X		MeOH	18
↓		↓				1-4oz jar			X	None	↓

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[signature]	4-15-16	1322	[signature]	4/15/16 13:22	1684293
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:
					JMX

Log In Time: 1607
Staff: KC
Date: 4/15/16

pg 3 of 3

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1604293

CLIENT: Cooks County

DATE SAMPLED: 4/15/14 DATE RECEIVED: 4/15/14 TIME RECEIVED: 1322

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 36

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 4.5 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: _____ CLIENT SPOKEN TO: _____ DATE/TIME: _____

OUTCOME: _____

SIGNATURE: KDeh

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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EPA Lab #PA00165

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

25 April 2016

Lab ID #: 1604396

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 04/21/16 13:36. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604396
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
SB-30 (6') US	1604396-01	Soil	Grab	04/19/16 09:38	04/21/16 13:36
VP-3 (5') US	1604396-02	Soil	Grab	04/20/16 09:45	04/21/16 13:36

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604396
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:23

SB-30 (6') US

1604396-01 (Soil) Sampled: 04/19/16 09:38

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**78.0**	0.100	NA	NA	wt%	04/25/16 11:13	04/25/16 11:13	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	**81700**	2560	308	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**12600**	2560	269	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Benzene	<2560	2560	333	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Ethylbenzene	**26900**	2560	269	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**5300**	2560	218	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
MTBE	<2560	2560	320	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Naphthalene	**7270**	2560	666	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Toluene	<2560	2560	295	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Xylene o	<2560	2560	423	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Xylene p/m	**11300**	5130	679	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	D1
Xylenes, Total	**11300**	7690	NA	NA	µg/Kg dry	04/22/16 12:53	04/22/16 12:53	EPA 8260 B	A	JMG	CC, D1

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1604396
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	04/25/16 15:23

VP-3 (5') US

1604396-02 (Soil) Sampled: 04/20/16 09:45

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
Percent Solids	**82.7**	0.100	NA	NA	wt%	04/25/16 11:13	04/25/16 11:13	SM 2540 G	A	JMK	
Volatile Organic Compounds by GC/MS											**O1**
1,2,4-Trimethylbenzene	<242	242	29.0	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<242	242	25.4	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Benzene	<242	242	31.4	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Ethylbenzene	<242	242	25.4	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<242	242	20.6	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
MTBE	<242	242	30.2	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Naphthalene	<242	242	62.9	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Toluene	<242	242	27.8	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Xylene o	<242	242	39.9	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Xylene p/m	<484	484	64.1	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	
Xylenes, Total	<726	726	NA	NA	µg/Kg dry	04/22/16 13:19	04/22/16 13:19	EPA 8260 B	A	JMG	CC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott, Technical Specialist II

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1604396 **Reported:** 04/25/16 15:23

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

O1	The VOC vial contained an amount of soil outside the EPA recommendation
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

Sampling Group: | Phase: Soil Sampling | PROJECT NAME: Soil Sampling

MR Project #: 4547.15.01 | SITE LOCATION: Robertsdale, PA

CLIENT: Cooks Country Store | SAMPLER(S): HL

NOTES:

Received On Ice: Y / N

Sample Temp: 4.1 °C

PWSID #:

Comments:

MOUNTAIN RESEARCH LI

825 25th Street, Altoona, PA 16601 (814) 9

110 McCracken Run Road, Dubois, PA 15801 (814) 3

CHAIN OF CUSTODY RECORI

MR PROJ. MGR. ML

Shipping Carrier:

Turn Around Time:
10 Day
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	% Solid	Preserve	LAB NUMBER
SB-30(6')US	4-19-16	0938	X		Soil	1-40ml VOC	2A	X		MeOH	01
1	1	1	1		1	1-4oz jar	1		X	None	1
4-20-16 ~~SB~~ VP-3(5')US	4-20-16	0945	1		1	1-40ml VOC	1	X		MeOH	02
1	1	1	1		1	1-4oz jar	1		X	None	1

RELINQUISHED BY:	DATE 4-21-16	TIME 1336	ACCEPTED BY:	DATE/TIME 4/21/16 13:36	Lab Workorder #: 1604396	Log In Time: 14:45
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:	Staff: KJ
						Date: 4/21/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1604396

CLIENT: Cooks Country Stone

DATE SAMPLED: 4/19/16 DATE RECEIVED: 4/21/16 TIME RECEIVED: 13:34

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 4

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 4.1 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

17 May 2016

Lab ID #: 1605196

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 05/10/16 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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DuBois, PA 15801
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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Trip Blank	1605196-01	Aqueous	Grab	05/10/16 07:08	05/10/16 16:10
Duplicate	1605196-02	Aqueous	Grab	05/10/16 00:00	05/10/16 16:10
MW-1	1605196-03	Aqueous	Grab	05/10/16 14:05	05/10/16 16:10
MW-2	1605196-04	Aqueous	Grab	05/10/16 12:41	05/10/16 16:10
MW-3	1605196-05	Aqueous	Grab	05/10/16 12:10	05/10/16 16:10
MW-4	1605196-06	Aqueous	Grab	05/10/16 12:24	05/10/16 16:10
MW-5	1605196-07	Aqueous	Grab	05/10/16 10:31	05/10/16 16:10
MW-6	1605196-08	Aqueous	Grab	05/10/16 13:35	05/10/16 16:10
MW-7	1605196-09	Aqueous	Grab	05/10/16 13:52	05/10/16 16:10
MW-8	1605196-10	Aqueous	Grab	05/10/16 13:25	05/10/16 16:10
MW-9	1605196-11	Aqueous	Grab	05/10/16 13:00	05/10/16 16:10
MW-10	1605196-12	Aqueous	Grab	05/10/16 13:58	05/10/16 16:10
MW-11	1605196-13	Aqueous	Grab	05/10/16 11:23	05/10/16 16:10
MW-12	1605196-14	Aqueous	Grab	05/10/16 13:42	05/10/16 16:10

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

Trip Blank

1605196-01 (Aqueous) Sampled: 05/10/16 07:08

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 14:27	05/12/16 14:27	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*97.6 %*		*80-120*		*05/12/16 14:27*	*05/12/16 14:27*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*80-120*		*05/12/16 14:27*	*05/12/16 14:27*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*105 %*		*80-120*		*05/12/16 14:27*	*05/12/16 14:27*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*05/12/16 14:27*	*05/12/16 14:27*	*EPA 8260 B*			

MOUNTAIN RESEARCH, LLC

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110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

Duplicate

1605196-02 (Aqueous) Sampled: 05/10/16 00:00

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Benzene	**4.98**	2.00	0.260	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 14:54	05/12/16 14:54	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*100 %*		*80-120*		*05/12/16 14:54*	*05/12/16 14:54*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.2 %*		*80-120*		*05/12/16 14:54*	*05/12/16 14:54*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*103 %*		*80-120*		*05/12/16 14:54*	*05/12/16 14:54*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*05/12/16 14:54*	*05/12/16 14:54*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-1

1605196-03 (Aqueous) Sampled: 05/10/16 14:05

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**1090**	10.0	1.20	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**384**	10.0	1.05	NA	µg/L	05/12/16 01:38	05/12/16 01:38	EPA 8260 B	A	JMG	D1
Benzene	**1540**	500	65.0	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
Ethylbenzene	**1180**	500	52.5	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**76.7**	10.0	0.850	NA	µg/L	05/12/16 01:38	05/12/16 01:38	EPA 8260 B	A	JMG	D1
MTBE	**18.2**	10.0	1.25	NA	µg/L	05/12/16 01:38	05/12/16 01:38	EPA 8260 B	A	JMG	D1
Naphthalene	**317**	10.0	10.0	NA	µg/L	05/12/16 01:38	05/12/16 01:38	EPA 8260 B	A	JMG	D1
Toluene	**3150**	500	57.5	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
Xylene o	**786**	500	82.5	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
Xylene p/m	**3620**	1000	132	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	D1
Xylenes, Total	**4400**	1500	NA	NA	µg/L	05/12/16 01:38	05/12/16 02:05	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*88.9 %*		*80-120*		*05/12/16 01:38*	*05/12/16 01:38*	*EPA 8260 B*			*D1*
Surrogate: 4-Bromofluorobenzene		*101 %*		*80-120*		*05/12/16 01:38*	*05/12/16 01:38*	*EPA 8260 B*			*D1*
Surrogate: Dibromofluoromethane		*104 %*		*80-120*		*05/12/16 01:38*	*05/12/16 01:38*	*EPA 8260 B*			*D1*
Surrogate: Toluene-d8		*105 %*		*80-120*		*05/12/16 01:38*	*05/12/16 01:38*	*EPA 8260 B*			*D1*

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-2

1605196-04 (Aqueous) Sampled: 05/10/16 12:41

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**231**	10.0	1.20	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**67.1**	10.0	1.05	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Benzene	**1150**	50.0	6.50	NA	µg/L	05/12/16 02:31	05/12/16 02:57	EPA 8260 B	A	JMG	D1
Ethylbenzene	**194**	10.0	1.05	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**37.8**	10.0	0.850	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	1.25	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Naphthalene	**38.3**	10.0	10.0	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Toluene	**40.0**	10.0	1.15	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Xylene o	**24.6**	10.0	1.65	NA	µg/L	05/12/16 02:31	05/12/16 02:31	EPA 8260 B	A	JMG	D1
Xylene p/m	**866**	100	13.2	NA	µg/L	05/12/16 02:31	05/12/16 02:57	EPA 8260 B	A	JMG	D1
Xylenes, Total	**891**	110	NA	NA	µg/L	05/12/16 02:31	05/12/16 02:57	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*98.8 %*		*80-120*		*05/12/16 02:31*	*05/12/16 02:31*	*EPA 8260 B*			*D1*
Surrogate: 4-Bromofluorobenzene		*99.8 %*		*80-120*		*05/12/16 02:31*	*05/12/16 02:31*	*EPA 8260 B*			*D1*
Surrogate: Dibromofluoromethane		*101 %*		*80-120*		*05/12/16 02:31*	*05/12/16 02:31*	*EPA 8260 B*			*D1*
Surrogate: Toluene-d8		*106 %*		*80-120*		*05/12/16 02:31*	*05/12/16 02:31*	*EPA 8260 B*			*D1*

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-3

1605196-05 (Aqueous) Sampled: 05/10/16 12:10

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**483**	10.0	1.20	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**132**	10.0	1.05	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Benzene	**503**	50.0	6.50	NA	µg/L	05/12/16 03:24	05/12/16 03:50	EPA 8260 B	A	JMG	D1
Ethylbenzene	**450**	10.0	1.05	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**36.0**	10.0	0.850	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
MTBE	<10.0	10.0	1.25	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Naphthalene	**117**	10.0	10.0	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Toluene	**550**	50.0	5.75	NA	µg/L	05/12/16 03:24	05/12/16 03:50	EPA 8260 B	A	JMG	D1
Xylene o	**176**	10.0	1.65	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Xylene p/m	**970**	20.0	2.65	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	D1
Xylenes, Total	**1150**	30.0	NA	NA	µg/L	05/12/16 03:24	05/12/16 03:24	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*103 %*		*80-120*		*05/12/16 03:24*	*05/12/16 03:24*	*EPA 8260 B*			*D1*
Surrogate: 4-Bromofluorobenzene		*99.2 %*		*80-120*		*05/12/16 03:24*	*05/12/16 03:24*	*EPA 8260 B*			*D1*
Surrogate: Dibromofluoromethane		*102 %*		*80-120*		*05/12/16 03:24*	*05/12/16 03:24*	*EPA 8260 B*			*D1*
Surrogate: Toluene-d8		*106 %*		*80-120*		*05/12/16 03:24*	*05/12/16 03:24*	*EPA 8260 B*			*D1*

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-4

1605196-06 (Aqueous) Sampled: 05/10/16 12:24

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**4.66**	2.00	0.240	NA	µg/L	05/12/16 01:12	05/12/16 15:20	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Benzene	**2.60**	2.00	0.260	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Ethylbenzene	**4.07**	2.00	0.210	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 01:12	05/12/16 15:20	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Xylene p/m	**7.14**	4.00	0.530	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	
Xylenes, Total	**7.14**	6.00	NA	NA	µg/L	05/12/16 01:12	05/12/16 01:12	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*80-120*		*05/12/16 01:12*	*05/12/16 01:12*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*97.1 %*		*80-120*		*05/12/16 01:12*	*05/12/16 01:12*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*105 %*		*80-120*		*05/12/16 01:12*	*05/12/16 01:12*	*EPA 8260 B*			
Surrogate: Toluene-d8		*105 %*		*80-120*		*05/12/16 01:12*	*05/12/16 01:12*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-5

1605196-07 (Aqueous) Sampled: 05/10/16 10:31

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**9.54**	2.00	0.240	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Benzene	**44.1**	2.00	0.260	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**2.83**	2.00	0.170	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 15:46	05/12/16 15:46	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*102 %*		*80-120*		*05/12/16 15:46*	*05/12/16 15:46*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.4 %*		*80-120*		*05/12/16 15:46*	*05/12/16 15:46*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*104 %*		*80-120*		*05/12/16 15:46*	*05/12/16 15:46*	*EPA 8260 B*			
Surrogate: Toluene-d8		*105 %*		*80-120*		*05/12/16 15:46*	*05/12/16 15:46*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-6

1605196-08 (Aqueous) Sampled: 05/10/16 13:35

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Benzene	**4.96**	2.00	0.260	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 16:13	05/12/16 16:13	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*80-120*		*05/12/16 16:13*	*05/12/16 16:13*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*80-120*		*05/12/16 16:13*	*05/12/16 16:13*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*107 %*		*80-120*		*05/12/16 16:13*	*05/12/16 16:13*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*05/12/16 16:13*	*05/12/16 16:13*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-7

1605196-09 (Aqueous) Sampled: 05/10/16 13:52

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**6.69**	2.00	0.240	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Benzene	**382**	20.0	2.60	NA	µg/L	05/12/16 16:39	05/13/16 11:14	EPA 8260 B	A	JMG	D1
Ethylbenzene	**82.2**	2.00	0.210	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**23.9**	2.00	0.170	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
MTBE	**7.41**	2.00	0.250	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Naphthalene	**10.4**	2.00	2.00	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Toluene	**57.0**	2.00	0.230	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Xylene o	**2.31**	2.00	0.330	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Xylene p/m	**55.2**	4.00	0.530	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	
Xylenes, Total	**57.5**	6.00	NA	NA	µg/L	05/12/16 16:39	05/12/16 16:39	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*94.1 %*		*80-120*		*05/12/16 16:39*	*05/12/16 16:39*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.8 %*		*80-120*		*05/12/16 16:39*	*05/12/16 16:39*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*98.9 %*		*80-120*		*05/12/16 16:39*	*05/12/16 16:39*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*05/12/16 16:39*	*05/12/16 16:39*	*EPA 8260 B*			

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Tegan Schott

Tegan Schott, Technical Specialist II

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-8

1605196-10 (Aqueous) Sampled: 05/10/16 13:25

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 17:05	05/12/16 17:05	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*05/12/16 17:05*	*05/12/16 17:05*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.2 %*		*80-120*		*05/12/16 17:05*	*05/12/16 17:05*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*106 %*		*80-120*		*05/12/16 17:05*	*05/12/16 17:05*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*05/12/16 17:05*	*05/12/16 17:05*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-9

1605196-11 (Aqueous) Sampled: 05/10/16 13:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 17:32	05/12/16 17:32	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*80-120*		*05/12/16 17:32*	*05/12/16 17:32*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.4 %*		*80-120*		*05/12/16 17:32*	*05/12/16 17:32*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*104 %*		*80-120*		*05/12/16 17:32*	*05/12/16 17:32*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*05/12/16 17:32*	*05/12/16 17:32*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-10

1605196-12 (Aqueous) Sampled: 05/10/16 13:58

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**98.4**	2.00	0.240	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	**47.7**	2.00	0.210	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Benzene	**15.2**	2.00	0.260	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Ethylbenzene	**20.9**	2.00	0.210	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**5.00**	2.00	0.170	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Naphthalene	**15.0**	2.00	2.00	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Toluene	**2.55**	2.00	0.230	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	N
Xylene o	**2.36**	2.00	0.330	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Xylene p/m	**66.9**	4.00	0.530	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	
Xylenes, Total	**69.3**	6.00	NA	NA	µg/L	05/13/16 12:59	05/13/16 12:59	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*102 %*		*80-120*		*05/13/16 12:59*	*05/13/16 12:59*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*80-120*		*05/13/16 12:59*	*05/13/16 12:59*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*103 %*		*80-120*		*05/13/16 12:59*	*05/13/16 12:59*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*05/13/16 12:59*	*05/13/16 12:59*	*EPA 8260 B*			

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Tegan Schott

Tegan Schott, Technical Specialist II

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-11

1605196-13 (Aqueous) Sampled: 05/10/16 11:23

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/16/16 14:11	05/16/16 14:11	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*80-120*		*05/16/16 14:11*	*05/16/16 14:11*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*101 %*		*80-120*		*05/16/16 14:11*	*05/16/16 14:11*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*106 %*		*80-120*		*05/16/16 14:11*	*05/16/16 14:11*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*05/16/16 14:11*	*05/16/16 14:11*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605196
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/17/16 11:58

MW-12

1605196-14 (Aqueous) Sampled: 05/10/16 13:42

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**67.1**	2.00	0.240	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	**20.7**	2.00	0.210	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Ethylbenzene	**9.36**	2.00	0.210	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	**3.42**	2.00	0.170	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Naphthalene	**8.04**	2.00	2.00	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Xylene o	**2.28**	2.00	0.330	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Xylene p/m	**31.6**	4.00	0.530	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	
Xylenes, Total	**33.9**	6.00	NA	NA	µg/L	05/16/16 14:37	05/16/16 14:37	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*99.8 %*		*80-120*		*05/16/16 14:37*	*05/16/16 14:37*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*100 %*		*80-120*		*05/16/16 14:37*	*05/16/16 14:37*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*108 %*		*80-120*		*05/16/16 14:37*	*05/16/16 14:37*	*EPA 8260 B*			
Surrogate: Toluene-d8		*102 %*		*80-120*		*05/16/16 14:37*	*05/16/16 14:37*	*EPA 8260 B*			

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1605196 **Reported:** 05/17/16 11:58

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

X	Fraction 02 does not have sample time per client.
N	Matrix spike recovery was outside of the laboratory acceptance criteria.
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

Billing Group: | Phase: GW-SAMP

PROJECT NAME: Cook's Country Store

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale, PA

CLIENT: Cook's Country Store

SAMPLER(S): BA

MOUNTAIN RESEARCH LI
825 25th Street, Altoona, PA 16601 (814) 9
110 McCracken Run Road, Dubois, PA 15801 (814) 3

CHAIN OF CUSTODY RECORD

NOTES:

Received On Ice: Y / N

Sample Temp: 8.6

PWSID #:

Comments:

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day X
3 Day
1 Day

Comments:

Analyses Requested: 8260B

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	Preserve	LAB NUMBER
Trip Blank	5/10/16	0708	X		AQ	2 40mL VOA	2A	HCl	01
Duplicate		N/A	X		AQ				02
MW-1	1405	~~1143~~ 34							03
MW-2		1241							04
MW-3		1210							05
MW-4		1224							06
MW-5		1031							07
MW-6		1335							08
MW-7		1352							09
MW-8		1325							10
MW-9		1300							11
MW-10		1358							12

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
[signature]	5/10/16	1610	[signature]	5/10/16 16:10	1605196
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:
					JAS 5/11/16

Log In Time: 17:24

Staff: KJ

Date: 5/10/16

1/2

Sampling Group: | Phase: GW-SAMP

PROJECT NAME: Cook's Country Store

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale, PA

CLIENT: Cook's Country Store

SAMPLER(S): BA

NOTES:

Received On Ice: (Y) / N

Sample Temp: 8.6

PWSID #:

Comments:

MOUNTAIN RESEARCH LLC

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(814) 371-6030 Fax (814) 375-0823

CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day X
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Preserve	LAB NUMBER
MW-11	5/10/15	1123	X		AQ	240 mL VOA	2A	X	HCl	13
MW-12	1	1342	1		1	1	1	X	1	14

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME
Brian Az	5/10/16	1610	[illegible]	5/10/16 16:10
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME

Lab Workorder #: 1605196

Labeled By: TAS 5/11/16

Log In Time: 17:24

Staff: KL

Date: 5/10/16

2/2

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1605196

CLIENT: Cooks County

DATE SAMPLED: 5/10/16 DATE RECEIVED: 5/10/16 TIME RECEIVED: 16:10

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 28

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 8.6 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☒ (kd) NO ☑

IF NO, EXPLAIN: No Sample time on Duplicate

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☐ NO ☑

IF NO, EXPLAIN: No Sample time on Duplicate

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: KOlm

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

Corporate Office and Laboratory
825 25th Street
Altoona, PA 16601
814.949.2034 Phone
800.837.4674 Toll Free
814.949.9591 Fax
PADEP #07-00418
EPA Lab #PA00165

DuBois Office and Laboratory
110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

13 May 2016

Lab ID #: 1605197

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 05/10/16 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tegan Schott
Technical Specialist II

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1605197 **Reported:** 05/13/16 13:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
GAC Effluent #1	1605197-01	Aqueous	Grab	05/10/16 13:08	05/10/16 16:10

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tegan Schott

Tegan Schott, Technical Specialist II

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1605197
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	05/13/16 13:53

GAC Effluent #1

1605197-01 (Aqueous) Sampled: 05/10/16 13:08

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.250	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	05/12/16 12:38	05/12/16 12:38	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*05/12/16 12:38*	*05/12/16 12:38*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*97.3 %*		*80-120*		*05/12/16 12:38*	*05/12/16 12:38*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*107 %*		*80-120*		*05/12/16 12:38*	*05/12/16 12:38*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*05/12/16 12:38*	*05/12/16 12:38*	*EPA 8260 B*			

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Tegan Schott

Tegan Schott, Technical Specialist II

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814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1605197 **Reported:** 05/13/16 13:53

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Sampling Group: | Phase: GW-SAMP

PROJECT NAME: Cooks Country Store

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale, PA

CLIENT: Cooks Country Store

SAMPLER(S): BA

MOUNTAIN RESEARCH LI
825 25th Street, Altoona, PA 16601 (814) 9
110 McCracken Run Road, Dubois, PA 15801 (814) 3

CHAIN OF CUSTODY RECOR

NOTES:

Received On Ice: (Y) / N

Sample Temp: 8.4

PWSID #:

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Preserve	LAB NUMBER
GAC Effluent #1	5/10/16	1308	X		AQ	2 40mL VOA	2A	X	HCl	01

Analyses Requested

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day X
3 Day
1 Day

Comments:

RELINQUISHED BY: Brian A | DATE: 5/10/16 | TIME: 1610 | ACCEPTED BY: K Delker | DATE/TIME: 5/10/16 16:10

RELINQUISHED BY: | DATE: | TIME: | ACCEPTED BY: | DATE/TIME:

Lab Workorder #: 1605197

Labeled By: TAS 5/11/16

Log In Time: 17:33

Staff: Kd

Date: 5/10/16

1/1

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1605197
CLIENT: Cooks County
DATE SAMPLED: 5/10/16 DATE RECEIVED: 5/10/16 TIME RECEIVED: 16:10

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐
2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 2
4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 8.6 °C BOTTLE(S) TEMPED: _____
6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: _____

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

20 June 2016

Lab ID #: 1606300

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 06/15/16 14:04. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606300 **Reported:** 06/20/16 12:59

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Outside Well	1606300-01	Aqueous	Grab	06/14/16 10:10	06/15/16 14:04
Inside Well	1606300-02	Aqueous	Grab	06/14/16 10:00	06/15/16 14:04
Trip Blank	1606300-03	Aqueous	Grab	06/13/16 08:00	06/15/16 14:04

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606300
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	06/20/16 12:59

Outside Well

1606300-01 (Aqueous) Sampled: 06/14/16 10:10

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	06/16/16 17:24	06/16/16 17:24	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*06/16/16 17:24*	*06/16/16 17:24*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.0 %*		*80-120*		*06/16/16 17:24*	*06/16/16 17:24*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*100 %*		*80-120*		*06/16/16 17:24*	*06/16/16 17:24*	*EPA 8260 B*			
Surrogate: Toluene-d8		*102 %*		*80-120*		*06/16/16 17:24*	*06/16/16 17:24*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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814.371.6030 Phone
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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606300
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	06/20/16 12:59

Inside Well

1606300-02 (Aqueous) Sampled: 06/14/16 10:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	06/16/16 17:51	06/16/16 17:51	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*110 %*		*80-120*		*06/16/16 17:51*	*06/16/16 17:51*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*80-120*		*06/16/16 17:51*	*06/16/16 17:51*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*101 %*		*80-120*		*06/16/16 17:51*	*06/16/16 17:51*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*06/16/16 17:51*	*06/16/16 17:51*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606300
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	06/20/16 12:59

Trip Blank

1606300-03 (Aqueous) Sampled: 06/13/16 08:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	06/16/16 18:17	06/16/16 18:17	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*112 %*		*80-120*		*06/16/16 18:17*	*06/16/16 18:17*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.5 %*		*80-120*		*06/16/16 18:17*	*06/16/16 18:17*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*97.3 %*		*80-120*		*06/16/16 18:17*	*06/16/16 18:17*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*06/16/16 18:17*	*06/16/16 18:17*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606300 **Reported:** 06/20/16 12:59

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

MOUNTAIN RESEARCH LLC

825 25th Street, Altoona, PA 16601 (814) 949-20
110 McCracken Run Road, Dubois, PA 15801 (814) 371-60

CHAIN OF CUSTODY RECORD

Billing Group:	Phase:	PROJECT NAME
—	SSCR-RA	Aquifer Testing

MR Project #: 4547.15.01

SITE LOCATION: Robertsdale, PA

CLIENT: Cooks Country Store

SAMPLER(S): KG / BA

NOTES:

Received On Ice: (Y) / N

Sample Temp: 5.4°

PWSID #:

Comments:

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day X
3 Day
1 Day

Comments:

Analyses Requested: 8260B

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Preserve	LAB NUMBER
Outside well	6-14-16	1010am	X		AQ	2-40mL	ZA	X	HCl	01
Inside well	6-14-16	1000am	X		AQ	2-40mL	ZA	X	HCl	02
Trip Blank	6-13-16	800am	X		AQ	2-40mL	ZA	X	HCl	03

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:	Log In Time:
Kurt Carr	6-15-16	2041pm	[illegible]	6/15/16 1404	1606300	10:38
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:	Staff: Kd
						Date: 6/16/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1606300

CLIENT: Cobb country

DATE SAMPLED: 6/14/16 DATE RECEIVED: 6/15/16 TIME RECEIVED: 1404

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 6

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 5.4 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [illegible]

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

28 July 2016

Lab ID #: 1607383

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 07/21/16 13:22. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607383
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	07/28/16 14:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Trip Blank	1607383-01	Aqueous	Grab	07/21/16 06:00	07/21/16 13:22
Cessna Well	1607383-02	Aqueous	Grab	07/21/16 07:30	07/21/16 13:22

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607383
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	07/28/16 14:19

Trip Blank

1607383-01 (Aqueous) Sampled: 07/21/16 06:00

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/22/16 21:27	07/22/16 21:27	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*101 %*		*80-120*		*07/22/16 21:27*	*07/22/16 21:27*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.8 %*		*80-120*		*07/22/16 21:27*	*07/22/16 21:27*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*100 %*		*80-120*		*07/22/16 21:27*	*07/22/16 21:27*	*EPA 8260 B*			
Surrogate: Toluene-d8		*100 %*		*80-120*		*07/22/16 21:27*	*07/22/16 21:27*	*EPA 8260 B*			

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607383
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 07/28/16 14:19
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

Cessna Well

1607383-02 (Aqueous) Sampled: 07/21/16 07:30

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/22/16 21:01	07/22/16 21:01	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*101 %*		*80-120*		*07/22/16 21:01*	*07/22/16 21:01*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*100 %*		*80-120*		*07/22/16 21:01*	*07/22/16 21:01*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*98.7 %*		*80-120*		*07/22/16 21:01*	*07/22/16 21:01*	*EPA 8260 B*			
Surrogate: Toluene-d8		*98.6 %*		*80-120*		*07/22/16 21:01*	*07/22/16 21:01*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1607383 **Reported:** 07/28/16 14:19

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Billing Group:	Phase: Water Sampling	PROJECT NAME: Water Sampling
MR Project #: 4547.15.01		SITE LOCATION: Robertsdale, PA
CLIENT: Cooks Country Store		SAMPLER(S): HL

MOUNTAIN RESEARCH

825 25th Street, Altoona, PA 16601 (8

110 McCracken Run Road, Dubois, PA 15801 (8

'-4674 FAX (814) 949-9591

) 375-0823

CHAIN OF CUSTODY REC

R PROJ. MGR. MC

hipping Carrier:

urn Around Time:
) Day
Day
Day

Comments:

NOTES:

Received On Ice: (Y) N

Sample Temp: 3 yOC

PWSID #:

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	826 OB	Preserve	LAB NUMBER
Trip Blank	7-21-16	0600	x		AQ	2-40ml vials	2A	x	HCL	01
Cessna Well	1	0730	1		1	1	1	1	1	02

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
	7-21-16	13:22		7/21/16 13:22	1607383
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:

Log In Time: 1449

Staff: Kd

Date: 7/21/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1607383

CLIENT: Cooks Country Store

DATE SAMPLED: 7/21/16 DATE RECEIVED: 7/21/16 TIME RECEIVED: 13:27

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 4

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 3.4 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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PADEP #33-00258
EPA Lab #PA00155

03 August 2016

Lab ID #: 1607485

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 07/26/16 13:14. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607485
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/03/16 14:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Trip Blank	1607485-01	Aqueous	Grab	07/26/16 07:18	07/26/16 13:14
MW-1D	1607485-02	Aqueous	Grab	07/26/16 10:58	07/26/16 13:14

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607485
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/03/16 14:55

Trip Blank

1607485-01 (Aqueous) Sampled: 07/26/16 07:18

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/29/16 21:30	07/29/16 21:30	EPA 8260 B	A	MTG	CC
Surrogate: 1,2-Dichloroethane-d4		*99.4 %*		*80-120*		*07/29/16 21:30*	*07/29/16 21:30*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*97.6 %*		*80-120*		*07/29/16 21:30*	*07/29/16 21:30*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*97.7 %*		*80-120*		*07/29/16 21:30*	*07/29/16 21:30*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*07/29/16 21:30*	*07/29/16 21:30*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1607485
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 08/03/16 14:55
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

MW-1D

1607485-02 (Aqueous) Sampled: 07/26/16 10:58

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/29/16 21:56	07/29/16 21:56	EPA 8260 B	A	MTG	CC
Surrogate: 1,2-Dichloroethane-d4		*98.4 %*		*80-120*		*07/29/16 21:56*	*07/29/16 21:56*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*94.6 %*		*80-120*		*07/29/16 21:56*	*07/29/16 21:56*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*98.0 %*		*80-120*		*07/29/16 21:56*	*07/29/16 21:56*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*07/29/16 21:56*	*07/29/16 21:56*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1607485 **Reported:** 08/03/16 14:55

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

BALL POINT PEN ONLY

00001

Billing Group:	Phase:	PROJECT NAME
	GW Sample	Cook's County Store
MR Project #		SITE LOCATION
4547.15.01		Cook's PA

CLIENT: Cook's Country Store

SAMPLER(S): BA

NOTES:
Received On Ice: (Y) / N
Sample Temp: 8.6°C
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

MOUNTAIN RI

825 25th Street, Altoona, PA 16601
110 McCracken Run Road, Dubois, PA 15801

CHAIN OF CUS

Analyses Re

7-4674 FAX (814) 949-9591
4) 375-0823

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day ___X___
3 Day _____
1 Day _____

Comments:

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B							Preserve	LAB NUMBER
TRIP BLANK	7/26/2016	718	X		AQ	2 40 mL VOA	2A	X							HCl	01
MW-1D	7/26/2016	1058	X		AQ	2 40mL VOA	2A	X							HCl	02

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Lab WO #:	Log In Time: 1501
[signature]	7/26/16	1314	[signature]	7/26/16	13:14	1687485	Staff: [signature]
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:	Date: 7/26/16

White - Lab; Blue - File; Yellow - Project Manager; Pink - Staff

C:\Users\bazar\Desktop\COC

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1607485

CLIENT: Cooks County of

DATE SAMPLED: 7/26/16 DATE RECEIVED: 7/26/16 TIME RECEIVED: 13:14

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 4

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 8.6 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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EPA Lab #PA00165

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PADEP #33-00258
EPA Lab #PA00155

03 August 2016

Lab ID #: 1607484

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 07/26/16 13:14. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1607484 **Reported:** 08/03/16 14:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
GAC Effluent #1	1607484-01	Aqueous	Grab	07/26/16 10:50	07/26/16 13:14

Mountain Research, LLC

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1607484 **Reported:** 08/03/16 14:55

GAC Effluent #1

1607484-01 (Aqueous) Sampled: 07/26/16 10:50

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	D2
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	D2
Benzene	<2.00	2.00	0.260	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	D2
MTBE	<2.00	2.00	0.123	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	C, D2, N, V
Toluene	<2.00	2.00	0.230	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/29/16 02:52	07/29/16 02:52	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*07/29/16 02:52*	*07/29/16 02:52*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*91.8 %*		*80-120*		*07/29/16 02:52*	*07/29/16 02:52*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*109 %*		*80-120*		*07/29/16 02:52*	*07/29/16 02:52*	*EPA 8260 B*			
Surrogate: Toluene-d8		*98.4 %*		*80-120*		*07/29/16 02:52*	*07/29/16 02:52*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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814.371.6030 Phone
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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1607484 **Reported:** 08/03/16 14:55

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

V	The calibration verification standard did not meet laboratory acceptance criteria.
N	Matrix duplicate spike recovery was outside of the laboratory acceptance criteria.
D2	The Relative Percent Difference between the matrix spike and its duplicate did not meet laboratory acceptance criteria.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
C	The associated analytical results may be biased low.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

BALL POINT PEN ONLY

00001

Billing Group:	Phase:	PROJECT NAME
	GW Sample	Cook's County Store
MR Project #		SITE LOCATION
4547.15.01		Cook's PA
CLIENT		SAMPLER(S)
Cook's Country Store		BA

MOUNTAIN RES

825 25th Street, Altoona, PA 16601 (8

110 McCracken Run Road, Dubois, PA 15801 (8

4674 FAX (814) 949-9591

375-0823

CHAIN OF CUSTC

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day ___X___
3 Day _____
1 Day _____

Comments:

NOTES:
Received On Ice: (Y) / N
Sample Temp: 8.2°C
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

Analyses Requ

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B							Preserve	LAB NUMBER
GAC EFFLUENT #1	7/26/2016	1050	X		AQ	2 40mL VOA	2A	X							HCl	01

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Lab WO #:	Log In Time: 1454
[signature]	7/26/16	1314	[signature]	7/26/16	13:14	1607484	Staff: KD
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:	Date: 7/26/16

White - Lab; Blue - File; Yellow - Project Manager; Pink - Staff

C:\Users\bazar\Desktop\COC

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1607484

CLIENT: Cooko Country Stone

DATE SAMPLED: 7/24/14 DATE RECEIVED: 7/24/14 TIME RECEIVED: 8:14

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 2

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 8.2 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

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EPA Lab #PA00165

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814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

04 August 2016

Lab ID #: 1608057

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 08/03/16 09:38. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1608057 **Reported:** 08/04/16 14:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Ouside Well	1608057-01	Aqueous	Grab	08/03/16 08:05	08/03/16 09:38
Inside Well	1608057-02	Aqueous	Grab	08/03/16 08:15	08/03/16 09:38
Trip Blank	1608057-03	Aqueous	Grab	08/03/16 06:00	08/03/16 09:38

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1608057
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 14:49

Ouside Well

1608057-01 (Aqueous) Sampled: 08/03/16 08:05

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	08/03/16 18:30	08/03/16 18:30	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*104 %*		*80-120*		*08/03/16 18:30*	*08/03/16 18:30*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*94.9 %*		*80-120*		*08/03/16 18:30*	*08/03/16 18:30*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*106 %*		*80-120*		*08/03/16 18:30*	*08/03/16 18:30*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*08/03/16 18:30*	*08/03/16 18:30*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1608057
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 14:49

Inside Well

1608057-02 (Aqueous) Sampled: 08/03/16 08:15

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	08/03/16 18:56	08/03/16 18:56	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*102 %*		*80-120*		*08/03/16 18:56*	*08/03/16 18:56*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*98.3 %*		*80-120*		*08/03/16 18:56*	*08/03/16 18:56*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*102 %*		*80-120*		*08/03/16 18:56*	*08/03/16 18:56*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*08/03/16 18:56*	*08/03/16 18:56*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1608057
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 14:49

Trip Blank

1608057-03 (Aqueous) Sampled: 08/03/16 06:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	08/03/16 19:22	08/03/16 19:22	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*104 %*		*80-120*		*08/03/16 19:22*	*08/03/16 19:22*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*95.9 %*		*80-120*		*08/03/16 19:22*	*08/03/16 19:22*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*104 %*		*80-120*		*08/03/16 19:22*	*08/03/16 19:22*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*08/03/16 19:22*	*08/03/16 19:22*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

Corporate Office and Laboratory
825 25th Street
Altoona, PA 16601
814.949.2034 Phone
800.837.4674 Toll Free
814.949.9591 Fax

DuBois Office and Laboratory
110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1608057 **Reported:** 08/04/16 14:49

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

BALL POINT PEN ONLY

Billing Group:	Phase: GW Sample	PROJECT NAME: Well Samples
MR Project #: 4547.15.01		SITE LOCATION: Robertsdale, PA
CLIENT: Cook's Country Store		SAMPLER(S): KC

NOTES:
Received On Ice: (Y) / N
Sample Temp: 16.4°C
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

MOUNTAIN RESEARCH LLC
825 25th Street, Altoona, PA 16601 (814) 949-2034 (800) 837
110 McCracken Run Road, Dubois, PA 15801 (814) 371-6030 Fax (814)

CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day
3 Day
1 Day X

Comments:

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	Analyses Requested: 8260B	Preserve	LAB NUMBER
Outside Well	8/3/16	0805	X		AQ	2-VOA 40mL	2A	X	HCl	01
Inside Well		0815								02
Trip Blank		0600								03

RELINQUISHED BY:	DATE 8/3/16	TIME 0938	ACCEPTED BY:	DATE 8/3/16	TIME 0938	Lab WO #: 16080S7	Log In Time: 10:08
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:	Staff: KL
							Date: 8/3/16

White - Lab; Blue - File; Yellow - Project Manager; Pink - Staff

H:\H\HYDRO\Field Forms\C-O-C\Blank COC_v1_04_08

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1608057

CLIENT: Cooks Country

DATE SAMPLED: 8/3/16 DATE RECEIVED: 8/3/16 TIME RECEIVED: 0938

1. CHECK ALL THAT APPLY: PA ☐ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 6

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☐ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 16.4 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☐ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: _____

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

Corporate Office and Laboratory
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Altoona, PA 16601
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PADEP #07-00418
EPA Lab #PA00165

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814.371.6030 Phone
814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

04 August 2016

Lab ID #: 1606528

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 06/28/16 17:07. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606528 **Reported:** 08/04/16 15:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Initial	1606528-01	Aqueous	Grab	06/28/16 10:20	06/28/16 17:07
Initial Effluent	1606528-02	Aqueous	Grab	06/28/16 10:45	06/28/16 17:07

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606528
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 08/04/16 15:48
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

Initial

1606528-01 (Aqueous) Sampled: 06/28/16 10:20

Mountain Research, LLC

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
General Chemistry by Standard/EPA/ASTM Methods											
pH	**6.85**	0.100	NA	NA	pH Units	06/28/16 17:22	06/28/16 17:22	SM4500-H B	A	CML	H1, pHT
Metals by ICP											
Iron, Dissolved	**32.1**	2.00	0.100	NA	mg/L	07/12/16 14:08	07/12/16 14:08	EPA 200.7 (Rev 4.4)	A	SEG	D1
Iron	**63.7**	2.00	0.420	NA	mg/L	07/07/16 12:15	07/12/16 15:48	EPA 200.7 (Rev 4.4)	A	SEG	D1
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**1020**	200	24.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**362**	10.0	1.05	NA	µg/L	07/11/16 13:05	07/11/16 13:05	EPA 8260 B	A	JMG	D1
Benzene	**3770**	200	26.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
Ethylbenzene	**759**	200	21.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**42.3**	10.0	0.850	NA	µg/L	07/11/16 13:05	07/11/16 13:05	EPA 8260 B	A	JMG	D1
MTBE	**21.3**	10.0	0.616	NA	µg/L	07/11/16 13:05	07/11/16 13:05	EPA 8260 B	A	JMG	D1
Naphthalene	**215**	10.0	10.0	NA	µg/L	07/11/16 13:05	07/11/16 13:05	EPA 8260 B	A	JMG	D1
Toluene	**3630**	200	23.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
Xylene o	**1150**	200	33.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
Xylene p/m	**3030**	400	53.0	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	D1
Xylenes, Total	**4180**	600	NA	NA	µg/L	07/11/16 13:05	07/11/16 13:31	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*78.7 %*		*80-120*		*07/11/16 13:05*	*07/11/16 13:05*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*105 %*		*80-120*		*07/11/16 13:05*	*07/11/16 13:05*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*100 %*		*80-120*		*07/11/16 13:05*	*07/11/16 13:05*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*07/11/16 13:05*	*07/11/16 13:05*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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814.949.9591 Fax

DuBois Office and Laboratory
110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606528 **Reported:** 08/04/16 15:48

Initial Effluent

1606528-02 (Aqueous) Sampled: 06/28/16 10:45

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
Benzene	**1.67**	1.00	0.260	NA	µg/L	07/11/16 13:58	07/11/16 13:58	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/11/16 13:58	07/11/16 13:58	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/11/16 13:58	07/11/16 13:58	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/11/16 13:58	07/11/16 13:58	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/11/16 13:58	07/11/16 13:58	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*101 %*		*80-120*		*07/11/16 13:58*	*07/11/16 13:58*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*104 %*		*80-120*		*07/11/16 13:58*	*07/11/16 13:58*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*102 %*		*80-120*		*07/11/16 13:58*	*07/11/16 13:58*	*EPA 8260 B*			
Surrogate: Toluene-d8		*103 %*		*80-120*		*07/11/16 13:58*	*07/11/16 13:58*	*EPA 8260 B*			

Mountain Research, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606528 **Reported:** 08/04/16 15:48

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

S	Surrogate recovery outside of laboratory acceptance criteria.
pHT	This pH was analyzed at 15.1 ° C.
H1	This sample was received and analyzed, for this analyte, outside of the recommended holding time.
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Report Revised: 8260 Compounds removed per request. This report replaces all previous reports. 8.4.16

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

BALL POINT PEN ONLY

00001

Billing Group:	Phase:	PROJECT NAME
		Feasibility Testing
MR Project # 4547.15.01		SITE LOCATION Robertsdale, PA
CLIENT Cooks Country Store		SAMPLER(S) JH

MOUNTAIN RES
825 25th Street, Altoona, PA 16601 (8
110 McCracken Run Road, Dubois, PA 15801 (8
1674 FAX (814) 949-9591
175-0823

CHAIN OF CUSTO

NOTES
Received On Ice: (Y) / N
Sample Temp: 10.6
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

MR PROJ. MGR Mike Crowe
Shipping Carrier:
Turn Around Time:
0 Day ✓
5 Day
1 Day
Comments:

Analyses Reque

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Total Fe	Dissolved Fe	Alt			pH	Preserve	LAB NUMBER
Initial	6/28/16	1020	✓		Aq	2-40 mL VOA	2A	X							HCl	01
Initial Effluent	↓	1045	↓		↓	2-40 mL VOA	2A	X							HCl	02
Initial		1020				1-250 mL poly			X					<2	HNO3	01
		1020				1-250 mL poly.				X				<2	HNO3	↓
	↓	1020	↓		↓	1-250 mL poly					X			✓	None	↓

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Lab WO #:
Jason [illegible]	6/28/16	1707	Christina L Shman	6/28/16	1707	1606528
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:

Log In Time: 15:50
Staff: RJ
Date: 6/29/16

White - . . Blue - File; Yellow - Project Manager; Pink - Staff

C:\Users\jhaney\Desktop\C.. of Custody

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1606528

CLIENT: Cooks Country Store

DATE SAMPLED: 6/28/16 DATE RECEIVED: 6/28/16 TIME RECEIVED: 1707

MOUNTAIN RESEARCH LLC

1. CHECK ALL THAT APPLY: PA ☒ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☒

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 7

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☒ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 10.6 °C BOTTLE(S) TEMPED: Intial eff

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☒ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☒ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☒ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☒ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☒ NO ☐

IF YES, EXPLAIN: pH

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☒ NO ☐

IF YES, WHAT ANALYSES? pH **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☒

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☒

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: Christina Schmucker

L60.30 A r0 Sample Receipt Form

For MR Use Only

MOUNTAIN RESEARCH, LLC

Corporate Office and Laboratory
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Altoona, PA 16601
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814.949.9591 Fax
PADEP #07-00418
EPA Lab #PA00165

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110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax
PADEP #33-00258
EPA Lab #PA00155

04 August 2016

Lab ID #: 1606301

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 06/15/16 14:04. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606301
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Influent -1	1606301-01	Aqueous	Grab	06/14/16 11:00	06/15/16 14:04
Effluent -1	1606301-02	Aqueous	Grab	06/14/16 12:00	06/15/16 14:04
Influent -2	1606301-03	Aqueous	Grab	06/14/16 12:30	06/15/16 14:04
Effluent -2	1606301-04	Aqueous	Grab	06/14/16 13:25	06/15/16 14:04

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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110 McCracken Run Road
DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606301
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:48

Influent -1

1606301-01 (Aqueous) Sampled: 06/14/16 11:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**1110**	100	12.0	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**381**	100	10.5	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Benzene	**1780**	100	13.0	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Ethylbenzene	**781**	100	10.5	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**63.7**	2.00	0.170	NA	µg/L	06/16/16 20:01	06/16/16 20:01	EPA 8260 B	A	JMG	
MTBE	**25.1**	2.00	0.123	NA	µg/L	06/16/16 20:01	06/16/16 20:01	EPA 8260 B	A	JMG	
Naphthalene	**129**	100	100	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Toluene	**2620**	100	11.5	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Xylene o	**1080**	100	16.5	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Xylene p/m	**3580**	200	26.5	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	D1
Xylenes, Total	**4660**	300	NA	NA	µg/L	06/16/16 20:01	06/17/16 14:49	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*72.3 %*		*80-120*		*06/16/16 20:01*	*06/16/16 20:01*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*102 %*		*80-120*		*06/16/16 20:01*	*06/16/16 20:01*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*95.0 %*		*80-120*		*06/16/16 20:01*	*06/16/16 20:01*	*EPA 8260 B*			
Surrogate: Toluene-d8		*107 %*		*80-120*		*06/16/16 20:01*	*06/16/16 20:01*	*EPA 8260 B*			

Mountain Research, LLC

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606301
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:48

Effluent -1

1606301-02 (Aqueous) Sampled: 06/14/16 12:00

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
Benzene	<1.00	1.00	0.260	NA	µg/L	06/17/16 13:31	06/17/16 13:31	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	06/17/16 13:31	06/17/16 13:31	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	06/17/16 13:31	06/17/16 13:31	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	06/17/16 13:31	06/17/16 13:31	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	06/17/16 13:31	06/17/16 13:31	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*104 %*		*80-120*		*06/17/16 13:31*	*06/17/16 13:31*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.4 %*		*80-120*		*06/17/16 13:31*	*06/17/16 13:31*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*100 %*		*80-120*		*06/17/16 13:31*	*06/17/16 13:31*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*06/17/16 13:31*	*06/17/16 13:31*	*EPA 8260 B*			

Mountain Research, LLC

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Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606301 **Reported:** 08/04/16 15:48

Influent -2

1606301-03 (Aqueous) Sampled: 06/14/16 12:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**965**	100	12.0	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**240**	100	10.5	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Benzene	**1310**	100	13.0	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Ethylbenzene	**971**	100	10.5	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**82.8**	2.00	0.170	NA	µg/L	06/16/16 20:54	06/16/16 20:54	EPA 8260 B	A	JMG	
MTBE	**22.8**	2.00	0.123	NA	µg/L	06/16/16 20:54	06/16/16 20:54	EPA 8260 B	A	JMG	
Naphthalene	**216**	100	100	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Toluene	**1530**	100	11.5	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Xylene o	**629**	100	16.5	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Xylene p/m	**2870**	200	26.5	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	D1
Xylenes, Total	**3500**	300	NA	NA	µg/L	06/16/16 20:54	06/17/16 15:15	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*83.8 %*		*80-120*		*06/16/16 20:54*	*06/16/16 20:54*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*103 %*		*80-120*		*06/16/16 20:54*	*06/16/16 20:54*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*100 %*		*80-120*		*06/16/16 20:54*	*06/16/16 20:54*	*EPA 8260 B*			
Surrogate: Toluene-d8		*106 %*		*80-120*		*06/16/16 20:54*	*06/16/16 20:54*	*EPA 8260 B*			

Mountain Research, LLC

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Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606301
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:48

Effluent -2

1606301-04 (Aqueous) Sampled: 06/14/16 13:25

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
Benzene	**14.0**	1.00	0.260	NA	µg/L	06/17/16 13:57	06/17/16 13:57	EPA 8260 B	A	JMG	
Ethylbenzene	**7.45**	2.00	0.210	NA	µg/L	06/17/16 13:57	06/17/16 13:57	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	06/17/16 13:57	06/17/16 13:57	EPA 8260 B	A	JMG	
Toluene	**26.4**	2.00	0.230	NA	µg/L	06/17/16 13:57	06/17/16 13:57	EPA 8260 B	A	JMG	
Xylenes, Total	**53.2**	6.00	NA	NA	µg/L	06/17/16 13:57	06/17/16 13:57	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*100 %*		*80-120*		*06/17/16 13:57*	*06/17/16 13:57*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*99.4 %*		*80-120*		*06/17/16 13:57*	*06/17/16 13:57*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*96.6 %*		*80-120*		*06/17/16 13:57*	*06/17/16 13:57*	*EPA 8260 B*			
Surrogate: Toluene-d8		*102 %*		*80-120*		*06/17/16 13:57*	*06/17/16 13:57*	*EPA 8260 B*			

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Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606301 **Reported:** 08/04/16 15:48

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

S	Surrogate recovery outside of laboratory acceptance criteria.
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Report Revised: 8260 Compounds removed per request. This report replaces all previous reports. 8.4.16

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

Billing Group:	Phase:	PROJECT NAME
—	SSCP-RA	Aquifer Testing

MR Project #	SITE LOCATION
4547.15.01	Robertsdale, PA

CLIENT	SAMPLER(S)
Coors Country Store	KGIBA

NOTES:

Received On Ice: (Y) / N

Sample Temp: 5.4°C

PWSID #:

Comments:

MOUNTAIN RESEARCH LLC

825 25th Street, Altoona, PA 16601 (814) 949-20

110 McCracken Run Road, Dubois, PA 15801 (814) 371-60

CHAIN OF CUSTODY RECORD

MR PROJ. MGR. MC

Shipping Carrier:

Turn Around Time:
10 Day X
3 Day
1 Day

Comments:

SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Field pH 6.95	Preserve	LAB NUMBER
Influent-1	6-14-16	1100am	X		AQ	2-40mL	ZA	X		HCl	01
Effluent-1	↓	1200pm	X		AQ	2-40mL	ZA	X		HCl	02
Influent-2		1230pm	X		AQ	2-40mL	ZA	X		HCl	03
Effluent-2	↓	125pm	X		AQ	2-40mL	ZA	X		HCl	04

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Lab Workorder #:
Kody Gam	6-15-16	2:40pm	[signature]	6-15-16 14:04	1606301
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE/TIME	Labeled By:

Log In Time: 10:43

Staff: Ed

Date: 6/16/16

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1606034

CLIENT: Oaks Casing

DATE SAMPLED: 6/14/16 DATE RECEIVED: 6/15/16 TIME RECEIVED: 14:04

MOUNTAIN RESEARCH LLC

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 8

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 5.4 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ ~~NO~~ ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ ~~NO~~ ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ ~~NO~~ ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☐ NO ☑

IF YES, EXPLAIN: _____

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____ **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: RDolan

L60.30 A r0 Sample Receipt Form

For MR Use Only

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EPA Lab #PA00165

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PADEP #33-00258
EPA Lab #PA00155

04 August 2016

Lab ID #: 1606548

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 06/30/16 07:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 08/04/16 15:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Low Vac	1606548-01	Aqueous	Grab	06/29/16 09:20	06/30/16 07:00
Mid Vac	1606548-02	Aqueous	Grab	06/29/16 11:15	06/30/16 07:00
High Vac	1606548-03	Aqueous	Grab	06/29/16 12:30	06/30/16 07:00
Final Influent	1606548-04	Aqueous	Grab	06/29/16 14:30	06/30/16 07:00
Final Effluent	1606548-05	Aqueous	Grab	06/29/16 14:30	06/30/16 07:00
Cessna Well	1606548-06	Aqueous	Grab	06/29/16 15:30	06/30/16 07:00

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Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:47

Low Vac

1606548-01 (Aqueous) Sampled: 06/29/16 09:20

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**636**	50.0	6.00	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
1,3,5-Trimethylbenzene	**259**	10.0	1.05	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Benzene	**1380**	50.0	6.50	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Ethylbenzene	**425**	10.0	1.05	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Isopropylbenzene (Cumene)	**26.6**	2.00	0.170	NA	µg/L	07/05/16 22:39	07/05/16 22:39	EPA 8260 B	A	MTG	
MTBE	**18.0**	10.0	0.616	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Naphthalene	**185**	10.0	10.0	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Toluene	**1300**	50.0	5.75	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylene o	**752**	50.0	8.25	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylene p/m	**2080**	100	13.2	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylenes, Total	**2830**	150	NA	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*70.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*103 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*91.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			
Surrogate: Toluene-d8		*96.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 08/04/16 15:47
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

Mid Vac

1606548-02 (Aqueous) Sampled: 06/29/16 11:15

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**401**	50.0	6.00	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**129**	50.0	5.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Benzene	**773**	50.0	6.50	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Ethylbenzene	**233**	50.0	5.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**35.0**	2.00	0.170	NA	µg/L	07/07/16 17:43	07/07/16 17:43	EPA 8260 B	A	JMG	
MTBE	**15.3**	2.00	0.123	NA	µg/L	07/07/16 17:43	07/07/16 17:43	EPA 8260 B	A	JMG	
Naphthalene	**203**	50.0	50.0	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Toluene	**661**	50.0	5.75	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylene o	**344**	50.0	8.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylene p/m	**1150**	100	13.2	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylenes, Total	**1490**	150	NA	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*64.8 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*101 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*101 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

MOUNTAIN RESEARCH, LLC

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Altoona, PA 16601
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DuBois Office and Laboratory
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DuBois, PA 15801
814.371.6030 Phone
814.375.0823 Fax

Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 08/04/16 15:47
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

High Vac

1606548-03 (Aqueous) Sampled: 06/29/16 12:30

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	**1150**	100	12.0	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**328**	100	10.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Benzene	**2510**	100	13.0	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Ethylbenzene	**983**	100	10.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	<100	100	8.50	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
MTBE	**9.65**	2.00	0.123	NA	µg/L	07/08/16 07:17	07/08/16 07:17	EPA 8260 B	A	JMG	
Naphthalene	**482**	100	100	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Toluene	**4970**	100	11.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylene o	**1450**	100	16.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylene p/m	**3590**	200	26.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylenes, Total	**5040**	300	NA	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*57.8 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*102 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*92.0 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			
Surrogate: Toluene-d8		*106 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			

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Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 08/04/16 15:47

Final Influent

1606548-04 (Aqueous) Sampled: 06/29/16 14:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Metals by ICP											
Iron, Dissolved	**9.69**	0.200	0.0100	NA	mg/L	07/14/16 14:11	07/14/16 14:11	EPA 200.7 (Rev 4.4)	A	SEG	D1
Iron	**84.4**	2.00	0.420	NA	mg/L	07/07/16 12:15	07/14/16 14:13	EPA 200.7 (Rev 4.4)	A	SEG	D1

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:47

Final Effluent

1606548-05 (Aqueous) Sampled: 06/29/16 14:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
pH	**7.38**	0.100	NA	NA	pH Units	06/30/16 09:32	06/30/16 09:32	SM4500-H B	A	CML	H1, pHT
Volatile Organic Compounds by GC/MS											
Benzene	**2.05**	1.00	0.260	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Ethylbenzene	**10.7**	2.00	0.210	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	C, L
Toluene	**12.3**	2.00	0.230	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Xylenes, Total	**63.5**	6.00	NA	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*100 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*94.2 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: Toluene-d8		*99.2 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			

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Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	08/04/16 15:47

Cessna Well

1606548-06 (Aqueous) Sampled: 06/29/16 15:30

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*97.5 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*99.8 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 08/04/16 15:47

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	09/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

S	Surrogate recovery outside of laboratory acceptance criteria.
pHT	This pH was analyzed at 17.3 ° C.
L	The LCS did not meet laboratory acceptance criteria.
H1	This sample was received and analyzed, for this analyte, outside of the recommended holding time.
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
C	The associated analytical results may be biased low.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

Report Revised: 8260 Compounds removed per request. This report replaces all previous reports. 8.4.16

BALL POINT PEN ONLY

00001

Billing Group:	Phase:	PROJECT NAME: Feasibility Testing
MR Project #: 4547.15.01		SITE LOCATION: Robertsdale, PA
CLIENT: Cooks Country Store		SAMPLER(S): JH

MOUNTAIN RES
825 25th Street, Altoona, PA 16601 (8
110 McCracken Run Road, Dubois, PA 15801 (8
1674 FAX (814) 949-9591
375-0823

CHAIN OF CUSTC

MR PROJ. MGR Mike Crowe
Shipping Carrier:

Turn Around Time:
10 Day ✓
5 Day
1 Day

Comments: Vac & Final Influent samples have strong petroleum odors.

NOTES:
Received On Ice: (Y) N
Sample Temp: 4.9c
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

Analyses Requ

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Dissolved Fe	Total Fe	pH				Preserve	LAB NUMBER
Low Vac	6/29/16	0920	X		Aq	2-40mL VOA	2A	X							HCl	01
Mid Vac	↓	1115	↓		↓	↓	↓	↓							↓	02
High Vac		1230				↓										03
Final Influent		1430				1-250mL NaOH			X					<2	HNO_3	04
↓		1430				1-250mL poly				X				<2	HNO_3	↓
Final Effluent		1430				2-40mL VOA	2A	X	~~X~~ JH						~~HNO_3~~ HCl JH	05
↓		1430				1-250mL poly					X			✓	None	↓
Cossna Well	↓	1530	↓		↓	2-40mL VOA	2A	X							HCl	06

RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Lab WO #:
[signature]	6/30/16	0700	[signature]	6/30/16	0700	1606548
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:

Log In Time: 11:18
Staff: KC
Date: 6/30/16

Page 10 of 11

White - Lab; Blue - File; Yellow - Project Manager; Pink - Staff

C:\Users\jhaney\Desktop\Chain of Custody

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 1606548

CLIENT: Cooks County Store

DATE SAMPLED: 6/29/16 DATE RECEIVED: 6/30/16 TIME RECEIVED: 0700

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 13

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 4.9 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☑ NO ☐

IF YES, EXPLAIN: pH

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☑ NO ☐

IF YES, WHAT ANALYSES? pH **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

July 19, 2016

Michael Crowe
Mountain Research, LLC
825 25th Street
Altoona, PA 16601

Project Location: Robertsdale, PA
Client Job Number:
Project Number: 4547.15.01
Laboratory Work Order Number: 16G0134

Enclosed are results of analyses for samples received by the laboratory on July 5, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven M. Case
Project Manager

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con-test® ANALYTICAL LABORATORY

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Mountain Research, LLC
825 25th Street
Altoona, PA 16601
ATTN: Michael Crowe

REPORT DATE: 7/19/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4547.15.01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 16G0134

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Robertsdale, PA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Low Vac	16G0134-01	Soil Gas		EPA TO-15	
Mid Vac	16G0134-02	Soil Gas		EPA TO-15	
High Vac	16G0134-03	Soil Gas		-	
				EPA TO-15	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

con-test® ANALYTICAL LABORATORY

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EPA TO-15

Qualifications:

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

Methyl tert-Butyl Ether (MTBE)
B153901-BS1

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Naphthalene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac], B153901-BLK1, B153901-BS1

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

1,2,4-Trimethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,3,5-Trimethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,4-Difluorobenzene (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,4-Difluorobenzene (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

4-Bromofluorobenzene (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

4-Bromofluorobenzene (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Benzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Bromochloromethane (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Chlorobenzene-d5 (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Chlorobenzene-d5 (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Ethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Isopropylbenzene (Cumene)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

m&p-Xylene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Methyl tert-Butyl Ether (MTBE)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Naphthalene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

o-Xylene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Toluene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

V-06

Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

Analyte & Samples(s) Qualified:

Methyl tert-Butyl Ether (MTBE)
B153901-BS1

con-test®
ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa Worthington

Lisa A. Worthington
Project Manager

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: Low Vac
Sample ID: 16G0134-01
Sample Matrix: Soil Gas
Sampled: 6/29/2016 15:44

Sample Description/Location:
Sub Description/Location:
Canister ID: 1451
Canister Size: 6 liter
Flow Controller ID: 4000
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.6
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	7200	150	RL-11	23000	480	3000	7/13/16 6:18	CMR
Ethylbenzene	1200	150	RL-11	5300	650	3000	7/13/16 6:18	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 6:18	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 6:18	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 6:18	CMR
Toluene	12000	150	RL-11	44000	570	3000	7/13/16 6:18	CMR
1,2,4-Trimethylbenzene	150	150	RL-11	750	740	3000	7/13/16 6:18	CMR
1,3,5-Trimethylbenzene	ND	150	RL-11	ND	740	3000	7/13/16 6:18	CMR
m&p-Xylene	5800	300	RL-11	25000	1300	3000	7/13/16 6:18	CMR
o-Xylene	990	150	RL-11	4300	650	3000	7/13/16 6:18	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	99.2	RL-11	70-130	7/13/16 6:18
4-Bromofluorobenzene (2)	116	RL-11	70-130	7/13/16 6:18

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: Mid Vac
Sample ID: 16G0134-02
Sample Matrix: Soil Gas
Sampled: 6/29/2016 15:50

Sample Description/Location:
Sub Description/Location:
Canister ID: 1020
Canister Size: 6 liter
Flow Controller ID: 5033
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -3.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	11000	150	RL-11	35000	480	3000	7/13/16 6:57	CMR
Ethylbenzene	3200	150	RL-11	14000	650	3000	7/13/16 6:57	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 6:57	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 6:57	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 6:57	CMR
Toluene	20000	150	RL-11	74000	570	3000	7/13/16 6:57	CMR
1,2,4-Trimethylbenzene	910	150	RL-11	4500	740	3000	7/13/16 6:57	CMR
1,3,5-Trimethylbenzene	600	150	RL-11	2900	740	3000	7/13/16 6:57	CMR
m&p-Xylene	15000	300	RL-11	64000	1300	3000	7/13/16 6:57	CMR
o-Xylene	2900	150	RL-11	13000	650	3000	7/13/16 6:57	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	97.5	RL-11	70-130	7/13/16 6:57
4-Bromofluorobenzene (2)	113	RL-11	70-130	7/13/16 6:57

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ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: High Vac
Sample ID: 16G0134-03
Sample Matrix: Soil Gas
Sampled: 6/29/2016 16:00

Sample Description/Location:
Sub Description/Location:
Canister ID: 1756
Canister Size: 6 liter
Flow Controller ID: 5034
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	15000	150	RL-11	48000	480	3000	7/13/16 7:37	CMR
Ethylbenzene	5000	150	RL-11	22000	650	3000	7/13/16 7:37	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 7:37	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 7:37	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 7:37	CMR
Toluene	27000	150	RL-11	100000	570	3000	7/13/16 7:37	CMR
1,2,4-Trimethylbenzene	1600	150	RL-11	7800	740	3000	7/13/16 7:37	CMR
1,3,5-Trimethylbenzene	1000	150	RL-11	4900	740	3000	7/13/16 7:37	CMR
m&p-Xylene	23000	300	RL-11	100000	1300	3000	7/13/16 7:37	CMR
o-Xylene	4500	150	RL-11	20000	650	3000	7/13/16 7:37	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	97.8	RL-11	70-130	7/13/16 7:37
4-Bromofluorobenzene (2)	114	RL-11	70-130	7/13/16 7:37

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Sample Extraction Data

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G0134-01 [Low Vac]	B153901	1.5	200	5	1000	400	40	07/12/16
16G0134-02 [Mid Vac]	B153901	1.5	200	5	1000	400	40	07/12/16
16G0134-03 [High Vac]	B153901	1.5	200	5	1000	400	40	07/12/16

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC		%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B153901 - TO-15 Prep												
Blank (B153901-BLK1)					Prepared & Analyzed: 07/12/16							
Benzene	ND	0.035										
Ethylbenzene	ND	0.035										
Isopropylbenzene (Cumene)	ND	0.089										
Methyl tert-Butyl Ether (MTBE)	ND	0.035										
Naphthalene	ND	0.035										L-03
Toluene	ND	0.035										
1,2,4-Trimethylbenzene	ND	0.035										
1,3,5-Trimethylbenzene	ND	0.035										
m&p-Xylene	ND	0.070										
o-Xylene	ND	0.035										
Surrogate: 4-Bromofluorobenzene (1)	*7.31*				*8.00*		*91.4*		*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			
LCS (B153901-BS1)					Prepared & Analyzed: 07/12/16							
Benzene	5.30				5.00		106		70-130			
Ethylbenzene	5.39				5.00		108		70-130			
Isopropylbenzene (Cumene)	ND	0.13		0.62					70-130			
Methyl tert-Butyl Ether (MTBE)	6.53				5.00		**131**	*	70-130			L-02, V-06
Naphthalene	3.19				5.00		**63.8**	*	70-130			L-03
Toluene	5.16				5.00		103		70-130			
1,2,4-Trimethylbenzene	5.26				5.00		105		70-130			
1,3,5-Trimethylbenzene	5.09				5.00		102		70-130			
m&p-Xylene	11.7				10.0		117		70-130			
o-Xylene	5.46				5.00		109		70-130			
Surrogate: 4-Bromofluorobenzene (1)	*7.64*				*8.00*		*95.6*		*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			
LCS (B153901-BS2)					Prepared & Analyzed: 07/12/16							
Benzene	ND	0.050		0.16					70-130			
Ethylbenzene	ND	0.050		0.22					70-130			
Isopropylbenzene (Cumene)	1.06				1.27		83.6		70-130			
Methyl tert-Butyl Ether (MTBE)	ND	0.050		0.18					70-130			
Naphthalene	0.00				1.19			*	70-130			
Toluene	ND	0.050		0.19					70-130			
1,2,4-Trimethylbenzene	ND	0.050		0.25					70-130			
1,3,5-Trimethylbenzene	ND	0.050		0.25					70-130			
m&p-Xylene	ND	0.10		0.43					70-130			
o-Xylene	ND	0.050		0.22					70-130			
Surrogate: 4-Bromofluorobenzene (1)	*0.00*				*8.00*			*	*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-06	Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Benzene	AIHA,FL,NJ,NY,VA,ME
Ethylbenzene	AIHA,FL,NJ,NY,VA,ME
Isopropylbenzene (Cumene)	AIHA,NJ,NY,ME
Methyl tert-Butyl Ether (MTBE)	AIHA,FL,NJ,NY,VA,ME
Naphthalene	NY,ME
Toluene	AIHA,FL,NJ,NY,VA,ME
1,2,4-Trimethylbenzene	AIHA,NJ,NY,ME
1,3,5-Trimethylbenzene	AIHA,NJ,NY,ME
m&p-Xylene	AIHA,FL,NJ,NY,VA,ME
o-Xylene	AIHA,FL,NJ,NY,VA,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2016
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

16G0134

http://www.contestlabs.com

Doc #378 Rev 0 5/8/15

CHAIN OF CUSTODY RECORD (AIR)

39 Spruce Street
East Longmeadow, MA 01028

Requested Turnaround Time
7-Day ☐ 10-Day ☑
Other:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☐
Other:
Enhanced Data Package Required: ☐
Email To: mcrowe@mountainresearch.com
~~Fax To #:~~ Jhaney@mountainresearch.com

Company Name: Mountain Research, LLC.
Address: 825 25th Street, Altoona, PA 16601
Phone: 814-949-2034
Project Name: Cooks Country Store Feas. Test
Project Location: Robertsdale, PA
Project Number: 4547.15.01 P.O. 22086
Project Manager: Mike Crowe
Con-Test Bid:
Invoice Recipient:
Sampled By:

ANALYSIS REQUESTED

Lab Use	Client Use	Collection Data		Duration	Flow Rate	Matrix	Volume	BTEX, Cumene	Naphthalene, MTBE	1,2,4-TMB, 1,3,5-TMB		" Hg Initial Pressure	Final Pressure	Lab Receipt Pressure	Summa Can ID	Flow Controller ID
Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Total Minutes Sampled	☐ m³/min ☐ L/min	Code	☐ Liters ☐ m³									
01	Low Vac	6/29/16 1539	6/29/16 1544			SG		H	H	H		-27	-5	10.6	1451	4000
02	Mid Vac	6/29/16 1546	6/29/16 1550			SG		H	H	H		-30	-5	3.8	1020	5033
03	High Vac	6/29/16 1555	6/29/16 1600			SG		H	H	H		-27	-5	10.0	1756	5034

Please fill out completely, sign, date and retain the yellow copy for your records

Summa canisters and flow controllers must be returned within 15 days of receipt or rental fees will apply

For summa canister and flow controller information please refer to Con-Test's Air Media Agreement

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes:
SG = SOIL GAS
IA = INDOOR AIR
AMB = AMBIENT
SS = SUB SLAB
D = DUP
BL = BLANK
O = Other_____

Relinquished by: (signature)	Date/Time:
[signature]	6/30/16 0800
Received by: (signature)	Date/Time:
[signature]	7/5/16 1307
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☐ MA MCP Required
☐ CT RCP Required
☐ Enhanced Data Package Required

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

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con-test® ANALYTICAL LABORATORY

39 Spruce St.
East Longmeadow, MA.
01028
P: 413-525-2332
F: 413-525-6405

AIR Only Receipt Checklist

CLIENT NAME Mountain Research RECEIVED BY: BLF DATE: 7/5/16

1) Was the chain(s) of custody relinquished and signed? Yes X No ____

2) Does the chain agree with the samples? Yes X No ____
If not, explain:

3) Are all the samples in good condition? Yes X No ____
If not, explain:

4) Are there any samples "On Hold"? Yes ____ No X Stored where: ____

5) Are there any RUSH or SHORT HOLDING TIME samples? Yes ____ No X
Who was notified ____ Date ____ Time ____

6) Location where samples are stored: Air lab

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: ____

7) Number of cans Individually Certified or Batch Certified? none

Containers received at Con-Test

		# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)		3	6L
Tedlar Bags			
TO-17 Tubes			
Regulators		3	grab
Restrictors			
Hg/Hopcalite Tube (NIOSH 6009)			
(TO-4A/ TO-10A/TO-13) PUFs			
PCB Florisil Tubes (NIOSH 5503)			
Air cassette			
PM 2.5/PM 10			
TO-11A Cartridges			
Other			

Unused Summas/PUF Media:

Unused Regulators:

1) Was all media (used & unused) checked into the WASP?

2) Were all returned summa cans, Restrictors & Regulators and PUF's documented as returned in the Air Lab Inbound/Outbound Excel Spreadsheet?

Laboratory Comments:

		1451	1756						4000	3084					
		1020							5033						

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The coolers'/boxes' custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	NA	
4) Cooler Temperature is acceptable.	NA	
5) Cooler Temperature is recorded.	NA	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) Samples are received within Holding Time.	T	
10) Sample containers have legible labels.	T	
11) Containers/media are not broken or leaking and valves and caps are closed tightly.	T	
12) Sample collection date/times are provided.	T	
13) Appropriate sample/media containers are used.	T	
14) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
15) Trip blanks provided if applicable.	T	

Who notified of False statements? **Date/Time:**

Log-In Technician Initials: **Date/Time:**

PLF 7/5/16 1302

Doc #278 Rev. 5 October 2014

con-test® ANALYTICAL LABORATORY

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July 22, 2016

Michael Crowe
Mountain Research, LLC
825 25th Street
Altoona, PA 16601

Project Location: Cooks Country Store
Client Job Number:
Project Number: 4547.15.01
Laboratory Work Order Number: 16G0625

Enclosed are results of analyses for samples received by the laboratory on July 13, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven M. Case
Project Manager

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con-test® ANALYTICAL LABORATORY

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Mountain Research, LLC
825 25th Street
Altoona, PA 16601
ATTN: Michael Crowe

REPORT DATE: 7/22/2016

PURCHASE ORDER NUMBER: 22123

PROJECT NUMBER: 4547.15.01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 16G0625

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Cooks Country Store

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SVP-1	16G0625-01	Soil Gas		EPA 3C	
				EPA TO-15	
SVP-2	16G0625-02	Soil Gas		EPA 3C	
				EPA TO-15	
SVP-3	16G0625-03	Soil Gas		EPA 3C	
				EPA TO-15	
SVP-4	16G0625-04	Soil Gas		EPA 3C	
				EPA TO-15	
SVP-5	16G0625-05	Soil Gas		EPA 3C	
				EPA TO-15	
Duplicate	16G0625-06	Soil Gas		EPA 3C	
				EPA TO-15	

con-test® ANALYTICAL LABORATORY

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA TO-15

Qualifications:

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Isopropylbenzene (Cumene)

16G0625-01[SVP-1], 16G0625-02[SVP-2], 16G0625-03[SVP-3], 16G0625-04[SVP-4], 16G0625-05[SVP-5], 16G0625-06[Duplicate], B154080-BLK1, B154080-BS1, B154090-BLK1, B154090-BS1

Naphthalene

16G0625-01[SVP-1], B154090-BLK1, B154090-BS1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa Worthington

Lisa A. Worthington
Project Manager

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-1
Sample ID: 16G0625-01
Sample Matrix: Soil Gas
Sampled: 7/8/2016 10:09

Sample Description/Location:
Sub Description/Location:
Canister ID: 1701
Canister Size: 6 liter
Flow Controller ID: 4182
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results %	RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 11:58	TPH

con-test® ANALYTICAL LABORATORY

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-1
Sample ID: 16G0625-01
Sample Matrix: Soil Gas
Sampled: 7/8/2016 10:09

Sample Description/Location:
Sub Description/Location:
Canister ID: 1701
Canister Size: 6 liter
Flow Controller ID: 4182
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	13000	150		43000	480	3000	7/17/16 23:39	TPH
Ethylbenzene	7700	150		33000	650	3000	7/17/16 23:39	TPH
Isopropylbenzene (Cumene)	490	380	L-03	2400	1900	3000	7/17/16 23:39	TPH
Methyl tert-Butyl Ether (MTBE)	ND	150		ND	540	3000	7/17/16 23:39	TPH
Naphthalene	ND	150	L-03	ND	790	3000	7/17/16 23:39	TPH
Toluene	910	150		3400	570	3000	7/17/16 23:39	TPH
1,2,4-Trimethylbenzene	1100	150		5400	740	3000	7/17/16 23:39	TPH
1,3,5-Trimethylbenzene	1100	150		5300	740	3000	7/17/16 23:39	TPH
m&p-Xylene	17000	300		73000	1300	3000	7/17/16 23:39	TPH
o-Xylene	200	150		890	650	3000	7/17/16 23:39	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	100	70-130	7/17/16 23:39
4-Bromofluorobenzene (2)	96.9	70-130	7/17/16 23:39

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-2
Sample ID: 16G0625-02
Sample Matrix: Soil Gas
Sampled: 7/8/2016 10:31

Sample Description/Location:
Sub Description/Location:
Canister ID: 1940
Canister Size: 6 liter
Flow Controller ID: 4183
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -24.5
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -13
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results %	RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 12:22	TPH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-2
Sample ID: 16G0625-02
Sample Matrix: Soil Gas
Sampled: 7/8/2016 10:31

Sample Description/Location:
Sub Description/Location:
Canister ID: 1940
Canister Size: 6 liter
Flow Controller ID: 4183
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -24.5
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -13
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.61	0.10		2.0	0.32	2	7/18/16 23:02	TPH
Ethylbenzene	0.52	0.10		2.3	0.43	2	7/18/16 23:02	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	7/18/16 23:02	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	7/18/16 23:02	TPH
Naphthalene	1.0	0.10		5.3	0.52	2	7/18/16 23:02	TPH
Toluene	2.5	0.10		9.5	0.38	2	7/18/16 23:02	TPH
1,2,4-Trimethylbenzene	0.73	0.10		3.6	0.49	2	7/18/16 23:02	TPH
1,3,5-Trimethylbenzene	0.30	0.10		1.5	0.49	2	7/18/16 23:02	TPH
m&p-Xylene	1.9	0.20		8.1	0.87	2	7/18/16 23:02	TPH
o-Xylene	0.37	0.10		1.6	0.43	2	7/18/16 23:02	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	102	70-130	7/18/16 23:02
4-Bromofluorobenzene (2)	91.0	70-130	7/18/16 23:02

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-3
Sample ID: 16G0625-03
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:02

Sample Description/Location:
Sub Description/Location:
Canister ID: 1956
Canister Size: 6 liter
Flow Controller ID: 4299
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -31
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -5.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results %	RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 12:57	TPH

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-3
Sample ID: 16G0625-03
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:02

Sample Description/Location:
Sub Description/Location:
Canister ID: 1956
Canister Size: 6 liter
Flow Controller ID: 4299
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -31
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -5.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.27	0.10		0.88	0.32	2	7/18/16 23:45	TPH
Ethylbenzene	0.10	0.10		0.45	0.43	2	7/18/16 23:45	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	7/18/16 23:45	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	7/18/16 23:45	TPH
Naphthalene	0.19	0.10		1.0	0.52	2	7/18/16 23:45	TPH
Toluene	1.1	0.10		4.0	0.38	2	7/18/16 23:45	TPH
1,2,4-Trimethylbenzene	0.23	0.10		1.2	0.49	2	7/18/16 23:45	TPH
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	7/18/16 23:45	TPH
m&p-Xylene	0.27	0.20		1.2	0.87	2	7/18/16 23:45	TPH
o-Xylene	0.12	0.10		0.54	0.43	2	7/18/16 23:45	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	99.8	70-130	7/18/16 23:45
4-Bromofluorobenzene (2)	89.6	70-130	7/18/16 23:45

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-4
Sample ID: 16G0625-04
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:45

Sample Description/Location:
Sub Description/Location:
Canister ID: 1954
Canister Size: 6 liter
Flow Controller ID: 4298
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -28
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results	% RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 13:22	TPH

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-4
Sample ID: 16G0625-04
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:45

Sample Description/Location:
Sub Description/Location:
Canister ID: 1954
Canister Size: 6 liter
Flow Controller ID: 4298
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -28
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.47	0.10		1.5	0.32	2	7/19/16 0:27	TPH
Ethylbenzene	0.20	0.10		0.85	0.43	2	7/19/16 0:27	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	7/19/16 0:27	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	7/19/16 0:27	TPH
Naphthalene	0.48	0.10		2.5	0.52	2	7/19/16 0:27	TPH
Toluene	1.4	0.10		5.1	0.38	2	7/19/16 0:27	TPH
1,2,4-Trimethylbenzene	0.37	0.10		1.8	0.49	2	7/19/16 0:27	TPH
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	7/19/16 0:27	TPH
m&p-Xylene	0.60	0.20		2.6	0.87	2	7/19/16 0:27	TPH
o-Xylene	0.21	0.10		0.90	0.43	2	7/19/16 0:27	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	100	70-130	7/19/16 0:27
4-Bromofluorobenzene (2)	88.9	70-130	7/19/16 0:27

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-5
Sample ID: 16G0625-05
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:25

Sample Description/Location:
Sub Description/Location:
Canister ID: 1152
Canister Size: 6 liter
Flow Controller ID: 4184
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -11
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results %	RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 13:47	TPH

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: SVP-5
Sample ID: 16G0625-05
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:25

Sample Description/Location:
Sub Description/Location:
Canister ID: 1152
Canister Size: 6 liter
Flow Controller ID: 4184
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -8
Receipt Vacuum(in Hg): -11
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.49	0.10		1.6	0.32	2	7/19/16 1:11	TPH
Ethylbenzene	0.16	0.10		0.68	0.43	2	7/19/16 1:11	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	7/19/16 1:11	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	7/19/16 1:11	TPH
Naphthalene	0.64	0.10		3.3	0.52	2	7/19/16 1:11	TPH
Toluene	1.6	0.10		6.2	0.38	2	7/19/16 1:11	TPH
1,2,4-Trimethylbenzene	0.45	0.10		2.2	0.49	2	7/19/16 1:11	TPH
1,3,5-Trimethylbenzene	0.12	0.10		0.61	0.49	2	7/19/16 1:11	TPH
m&p-Xylene	0.44	0.20		1.9	0.87	2	7/19/16 1:11	TPH
o-Xylene	0.25	0.10		1.1	0.43	2	7/19/16 1:11	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	100	70-130	7/19/16 1:11
4-Bromofluorobenzene (2)	90.3	70-130	7/19/16 1:11

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: Duplicate
Sample ID: 16G0625-06
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:25

Sample Description/Location:
Sub Description/Location:
Canister ID: 1929
Canister Size: 6 liter
Flow Controller ID: 4185
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -6
Receipt Vacuum(in Hg): -8.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA 3C

Analyte	Results	% RL	Flag/Qual	Dilution	Date/Time Analyzed	Analyst
Helium	ND	0.40		1	7/20/16 14:15	TPH

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ANALYTICAL RESULTS

Project Location: Cooks Country Store
Date Received: 7/13/2016
Field Sample #: Duplicate
Sample ID: 16G0625-06
Sample Matrix: Soil Gas
Sampled: 7/8/2016 11:25

Sample Description/Location:
Sub Description/Location:
Canister ID: 1929
Canister Size: 6 liter
Flow Controller ID: 4185
Sample Type: 30 min

Work Order: 16G0625
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -6
Receipt Vacuum(in Hg): -8.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.60	0.10		1.9	0.32	2	7/19/16 1:53	TPH
Ethylbenzene	0.21	0.10		0.92	0.43	2	7/19/16 1:53	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	7/19/16 1:53	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	7/19/16 1:53	TPH
Naphthalene	0.61	0.10		3.2	0.52	2	7/19/16 1:53	TPH
Toluene	3.0	0.10		11	0.38	2	7/19/16 1:53	TPH
1,2,4-Trimethylbenzene	0.58	0.10		2.8	0.49	2	7/19/16 1:53	TPH
1,3,5-Trimethylbenzene	0.13	0.10		0.66	0.49	2	7/19/16 1:53	TPH
m&p-Xylene	0.62	0.20		2.7	0.87	2	7/19/16 1:53	TPH
o-Xylene	0.33	0.10		1.5	0.43	2	7/19/16 1:53	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	100	70-130	7/19/16 1:53
4-Bromofluorobenzene (2)	91.4	70-130	7/19/16 1:53

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Sample Extraction Data

Prep Method: TO-15 Prep-EPA 3C

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G0625-01 [SVP-1]	B154205	1.5	1	N/A	1000	0.5	0.75	07/20/16
16G0625-02 [SVP-2]	B154205	2	1	N/A	1000	0.5	1.0	07/20/16
16G0625-03 [SVP-3]	B154205	1.5	1	N/A	1000	0.5	0.75	07/20/16
16G0625-04 [SVP-4]	B154205	1.5	1	N/A	1000	0.5	0.75	07/20/16
16G0625-05 [SVP-5]	B154205	2	1	N/A	1000	0.5	1.0	07/20/16
16G0625-06 [Duplicate]	B154205	1.5	1	N/A	1000	0.5	0.75	07/20/16

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G0625-02 [SVP-2]	B154080	2	1	N/A	1000	400	400	07/18/16
16G0625-03 [SVP-3]	B154080	1.5	1	N/A	1000	400	300	07/18/16
16G0625-04 [SVP-4]	B154080	1.5	1	N/A	1000	400	300	07/18/16
16G0625-05 [SVP-5]	B154080	2	1	N/A	1000	400	400	07/18/16
16G0625-06 [Duplicate]	B154080	1.5	1	N/A	1000	400	300	07/18/16

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G0625-01 [SVP-1]	B154090	1.5	200	5	1000	400	40	07/17/16

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QUALITY CONTROL

Miscellaneous Air Analyses - Quality Control

Analyte	% Results	% RL	ug/m3 Results	ug/m3 RL	Spike Level %	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B154205 - TO-15 Prep											
Blank (B154205-BLK1)					Prepared & Analyzed: 07/20/16						
Helium	ND	0.40									
LCS (B154205-BS1)					Prepared & Analyzed: 07/20/16						
Helium	0.700				1.00		70.0	70-130			
Duplicate (B154205-DUP1)			**Source: 16G0625-05**		Prepared & Analyzed: 07/20/16						
Helium	0.20	0.40				0.25			22.2	25	

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B154080 - TO-15 Prep											
Blank (B154080-BLK1)					Prepared & Analyzed: 07/18/16						
Benzene	ND	0.035									
Ethylbenzene	ND	0.035									
Isopropylbenzene (Cumene)	ND	0.089									L-03
Methyl tert-Butyl Ether (MTBE)	ND	0.035									
Naphthalene	ND	0.035									
Toluene	ND	0.035									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	*7.35*				*8.00*		*91.9*	*70-130*			
LCS (B154080-BS1)					Prepared & Analyzed: 07/18/16						
Benzene	4.46				5.00		89.1	70-130			
Ethylbenzene	5.40				5.00		108	70-130			
Isopropylbenzene (Cumene)	0.802				1.27		**63.1** *	70-130			L-03
Methyl tert-Butyl Ether (MTBE)	6.34				5.00		127	70-130			
Naphthalene	3.52				5.00		70.4	70-130			
Toluene	4.86				5.00		97.2	70-130			
1,2,4-Trimethylbenzene	6.18				5.00		124	70-130			
1,3,5-Trimethylbenzene	6.17				5.00		123	70-130			
m&p-Xylene	12.1				10.0		121	70-130			
o-Xylene	5.96				5.00		119	70-130			
Surrogate: 4-Bromofluorobenzene (1)	*8.28*				*8.00*		*103*	*70-130*			
Batch B154090 - TO-15 Prep											
Blank (B154090-BLK1)					Prepared & Analyzed: 07/17/16						
Benzene	ND	0.035									
Ethylbenzene	ND	0.035									
Isopropylbenzene (Cumene)	ND	0.089									L-03
Methyl tert-Butyl Ether (MTBE)	ND	0.035									
Naphthalene	ND	0.035									L-03
Toluene	ND	0.035									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	*8.14*				*8.00*		*102*	*70-130*			

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC		%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B154090 - TO-15 Prep												
LCS (B154090-BS1)					Prepared & Analyzed: 07/17/16							
Benzene	4.10				5.00		82.1		70-130			
Ethylbenzene	5.08				5.00		102		70-130			
Isopropylbenzene (Cumene)	0.829				1.27		**65.3**	*	70-130			L-03
Methyl tert-Butyl Ether (MTBE)	6.12				5.00		122		70-130			
Naphthalene	2.52				5.00		**50.4**	*	70-130			L-03
Toluene	4.64				5.00		92.8		70-130			
1,2,4-Trimethylbenzene	5.17				5.00		103		70-130			
1,3,5-Trimethylbenzene	5.17				5.00		103		70-130			
m&p-Xylene	11.4				10.0		114		70-130			
o-Xylene	5.62				5.00		112		70-130			
Surrogate: 4-Bromofluorobenzene (1)	*8.34*				*8.00*		*104*		*70-130*			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Benzene	AIHA,FL,NJ,NY,VA,ME
Ethylbenzene	AIHA,FL,NJ,NY,VA,ME
Isopropylbenzene (Cumene)	AIHA,NJ,NY,ME
Methyl tert-Butyl Ether (MTBE)	AIHA,FL,NJ,NY,VA,ME
Naphthalene	NY,ME
Toluene	AIHA,FL,NJ,NY,VA,ME
1,2,4-Trimethylbenzene	AIHA,NJ,NY,ME
1,3,5-Trimethylbenzene	AIHA,NJ,NY,ME
m&p-Xylene	AIHA,FL,NJ,NY,VA,ME
o-Xylene	AIHA,FL,NJ,NY,VA,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

1160625

http://www.contestlabs.com

Doc #378 Rev 0 5/8/15

CHAIN OF CUSTODY RECORD (AIR)

39 Spruce Street
East Longmeadow, MA 01028

Requested Turnaround Time
7-Day ☒ 10-Day ☐
Other:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☐
Other:
Enhanced Data Package Required: ☐
Email To: MCrowe@mountainresearch.com
Fax To #:

Company Name: Mountain Research
Address: 825 25th St Altoona, PA
Phone: 949 2034
Project Name: Cook's Country Store
Project Location: Cook's PA
Project Number: 4547.15.01 P.O.# 22123
Project Manager: Mike Crowe
Con-Test Bid:
Invoice Recipient:
Sampled By: Ben Azar

ANALYSIS REQUESTED

Lab Use	Client Use	Collection Data		Duration	Flow Rate	Matrix	Volume	Benzene, Ethylbenzene, Cumene, Toluene, Xylenes, Naphthalene, 124 TMB, 135 TMB, MTBE	Helium			" Hg			Please fill out completely, sign, date and retain the yellow copy for your records. Summa canisters and flow controllers must be returned within 15 days of receipt or rental fees will apply. For summa canister and flow controller information please refer to Con-Test's Air Media Agreement	
Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Total Minutes Sampled	m³/min L/min	Code	Liters m³					Initial Pressure	Final Pressure	Lab Receipt Pressure	Summa Can ID	Flow Controller ID
01	SVP-1	7/8/16 0942	7/8/16 1009	27		SG		X	X			27	5	.17	1701	4182
02	SVP-2	7/8/16 1011	7/8/16 1031	20		SG		X	X			24.5	8	.13	1940	4183
03	SVP-3	7/8/16 1032	7/8/16 1102	30		SG		X	X			31	8	.5	1956	4299
04	SVP-4	7/8/16 1117	7/8/16 1145	28		SG		X	X			28	5	.08	1954	4298
05	SVP-5	7/8/16 1055	7/8/16 1125	30		SG		X	X			27	8	.11	1152	4184
06	Duplicate	7/8/16 1055	7/8/16 1125	30		D		X	X			27	8	.08	1929	4185

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes:
SG = SOIL GAS
IA = INDOOR AIR
AMB = AMBIENT
SS = SUB SLAB
D = DUP
BL = BLANK
O = Other_____

Relinquished by: (signature)	Date/Time:	Detection Limit Requirements	Special Requirements
Received by: (signature) Mike Mast	Date/Time: 7/13/16 1218	MA	☐ MA MCP Required
Relinquished by: (signature)	Date/Time:	CT	☐ CT RCP Required
Received by: (signature)	Date/Time:	Other:	☐ Enhanced Data Package Required
Relinquished by: (signature)	Date/Time:		
Received by: (signature)	Date/Time:		

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

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39 Spruce St.
East Longmeadow, MA.
01028
P: 413-525-2332
F: 413-525-6405

AIR Only Receipt Checklist

CLIENT NAME Mountain Research RECEIVED BY: PLF DATE: 7/13/16

1) Was the chain(s) of custody relinquished and signed? Yes X No ____

2) Does the chain agree with the samples? Yes X No ____
If not, explain:

3) Are all the samples in good condition? Yes X No ____
If not, explain:

4) Are there any samples "On Hold"? Yes ____ No X Stored where: ____

5) Are there any RUSH or SHORT HOLDING TIME samples? Yes ____ No X
Who was notified ____ Date ____ Time ____

6) Location where samples are stored: Air lab

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: ____

7) Number of cans Individually Certified or Batch Certified? none

Containers received at Con-Test

		# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)		6	6L
Tedlar Bags			
TO-17 Tubes			
Regulators		6	30min
Restrictors			
Hg/Hopcalite Tube (NIOSH 6009)			
(TO-4A/ TO-10A/TO-13) PUFs			
PCB Florisil Tubes (NIOSH 5503)			
Air cassette			
PM 2.5/PM 10			
TO-11A Cartridges			
Other			

Unused Summas/PUF Media:

Unused Regulators:

1) Was all media (used & unused) checked into the WASP?

2) Were all returned summa cans, Restrictors & Regulators and PUF's documented as returned in the Air Lab Inbound/Outbound Excel Spreadsheet?

Laboratory Comments:

	1761	1956	1152						4182	4299	4184				
	1940	1954	1609						4183	4298	4185				

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The coolers'/boxes' custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	NA	
4) Cooler Temperature is acceptable.	NA	
5) Cooler Temperature is recorded.	NA	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) Samples are received within Holding Time.	T	
10) Sample containers have legible labels.	T	
11) Containers/media are not broken or leaking and valves and caps are closed tightly.	T	
12) Sample collection date/times are provided.	T	
13) Appropriate sample/media containers are used.	T	
14) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
15) Trip blanks provided if applicable.	T	

Who notified of False statements? **Date/Time:**

Doc #278 Rev. 5 October 2014 **Log-In Technician Initials:** **Date/Time:**

PLF 7/13/16 1218

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 5, 2016

Michael Crowe
Mountain Research, LLC
825 25th Street
Altoona, PA 16601

Project Location: Cooks Country Store Feas.Test
Client Job Number:
Project Number: 4547.15.01
Laboratory Work Order Number: 16G1248

Enclosed are results of analyses for samples received by the laboratory on July 26, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven M. Case
Project Manager

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Mountain Research, LLC
825 25th Street
Altoona, PA 16601
ATTN: Michael Crowe

REPORT DATE: 8/5/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4547.15.01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 16G1248

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Cooks Country Store Feas.Test

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
VP-1	16G1248-01	Soil Gas		EPA TO-15	
VP-2	16G1248-02	Soil Gas		EPA TO-15	
VP-3	16G1248-03	Soil Gas		EPA TO-15	
VP-4	16G1248-04	Soil Gas		EPA TO-15	
VP-5	16G1248-05	Soil Gas		EPA TO-15	
Duplicate	16G1248-06	Soil Gas		EPA TO-15	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA TO-15

Qualifications:

DL-03

Elevated reporting limit due to matrix.

Analyte & Samples(s) Qualified:

16G1248-01[VP-1]

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Isopropylbenzene (Cumene)

16G1248-01[VP-1], 16G1248-05[VP-5], 16G1248-06[Duplicate], B155405-BLK1, B155405-BS1

S-26

Surrogate outside of control limits.

Analyte & Samples(s) Qualified:

4-Bromofluorobenzene (2)

16G1248-05[VP-5], 16G1248-06[Duplicate]

V-06

Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

Analyte & Samples(s) Qualified:

o-Xylene

16G1248-02[VP-2], 16G1248-03[VP-3], 16G1248-04[VP-4], B155404-BS1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa Worthington

Lisa A. Worthington
Project Manager

con-test® ANALYTICAL LABORATORY

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: VP-1
Sample ID: 16G1248-01
Sample Matrix: Soil Gas
Sampled: 7/21/2016 14:00

Sample Description/Location:
Sub Description/Location:
Canister ID: 1315
Canister Size: 6 liter
Flow Controller ID: 4305
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Sample Flags: DL-03

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	2000	150		6500	480	3000	8/3/16 17:10	TPH
Ethylbenzene	220	150		940	650	3000	8/3/16 17:10	TPH
Isopropylbenzene (Cumene)	ND	380	L-03	ND	1900	3000	8/3/16 17:10	TPH
Methyl tert-Butyl Ether (MTBE)	ND	150		ND	540	3000	8/3/16 17:10	TPH
Naphthalene	ND	150		ND	790	3000	8/3/16 17:10	TPH
Toluene	ND	150		ND	570	3000	8/3/16 17:10	TPH
1,2,4-Trimethylbenzene	ND	150		ND	740	3000	8/3/16 17:10	TPH
1,3,5-Trimethylbenzene	ND	150		ND	740	3000	8/3/16 17:10	TPH
m&p-Xylene	ND	300		ND	1300	3000	8/3/16 17:10	TPH
o-Xylene	ND	150		ND	650	3000	8/3/16 17:10	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	98.3	70-130	8/3/16 17:10
4-Bromofluorobenzene (2)	73.9	70-130	8/3/16 17:10

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: VP-2
Sample ID: 16G1248-02
Sample Matrix: Soil Gas
Sampled: 7/21/2016 13:54

Sample Description/Location:
Sub Description/Location:
Canister ID: 1851
Canister Size: 6 liter
Flow Controller ID: 4205
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.51	0.10		1.6	0.32	2	8/5/16 11:01	TPH
Ethylbenzene	0.35	0.10		1.5	0.43	2	8/5/16 11:01	TPH
Isopropylbenzene (Cumene)	ND	0.25		ND	1.2	2	8/5/16 11:01	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	8/5/16 11:01	TPH
Naphthalene	0.89	0.10		4.7	0.52	2	8/5/16 11:01	TPH
Toluene	1.3	0.10		4.8	0.38	2	8/5/16 11:01	TPH
1,2,4-Trimethylbenzene	1.6	0.10		7.7	0.49	2	8/5/16 11:01	TPH
1,3,5-Trimethylbenzene	0.51	0.10		2.5	0.49	2	8/5/16 11:01	TPH
m&p-Xylene	1.5	0.20		6.7	0.87	2	8/5/16 11:01	TPH
o-Xylene	0.54	0.10	V-06	2.3	0.43	2	8/5/16 11:01	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	104	70-130	8/5/16 11:01
4-Bromofluorobenzene (2)	98.3	70-130	8/5/16 11:01

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: VP-3
Sample ID: 16G1248-03
Sample Matrix: Soil Gas
Sampled: 7/21/2016 13:57

Sample Description/Location:
Sub Description/Location:
Canister ID: 1785
Canister Size: 6 liter
Flow Controller ID: 4304
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -29
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.7
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.26	0.10		0.82	0.32	2	8/5/16 11:43	TPH
Ethylbenzene	0.19	0.10		0.82	0.43	2	8/5/16 11:43	TPH
Isopropylbenzene (Cumene)	ND	0.25		ND	1.2	2	8/5/16 11:43	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	8/5/16 11:43	TPH
Naphthalene	0.79	0.10		4.1	0.52	2	8/5/16 11:43	TPH
Toluene	1.6	0.10		6.2	0.38	2	8/5/16 11:43	TPH
1,2,4-Trimethylbenzene	0.80	0.10		3.9	0.49	2	8/5/16 11:43	TPH
1,3,5-Trimethylbenzene	0.23	0.10		1.1	0.49	2	8/5/16 11:43	TPH
m&p-Xylene	0.77	0.20		3.3	0.87	2	8/5/16 11:43	TPH
o-Xylene	0.34	0.10	V-06	1.5	0.43	2	8/5/16 11:43	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	103	70-130	8/5/16 11:43
4-Bromofluorobenzene (2)	97.6	70-130	8/5/16 11:43

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: VP-4
Sample ID: 16G1248-04
Sample Matrix: Soil Gas
Sampled: 7/21/2016 13:55

Sample Description/Location:
Sub Description/Location:
Canister ID: 1305
Canister Size: 6 liter
Flow Controller ID: 4283
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -28
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -8.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.72	0.10		2.3	0.32	2	8/5/16 12:27	TPH
Ethylbenzene	0.31	0.10		1.4	0.43	2	8/5/16 12:27	TPH
Isopropylbenzene (Cumene)	ND	0.25		ND	1.2	2	8/5/16 12:27	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	8/5/16 12:27	TPH
Naphthalene	0.88	0.10		4.6	0.52	2	8/5/16 12:27	TPH
Toluene	2.9	0.10		11	0.38	2	8/5/16 12:27	TPH
1,2,4-Trimethylbenzene	1.0	0.10		5.0	0.49	2	8/5/16 12:27	TPH
1,3,5-Trimethylbenzene	0.28	0.10		1.4	0.49	2	8/5/16 12:27	TPH
m&p-Xylene	1.2	0.20		5.2	0.87	2	8/5/16 12:27	TPH
o-Xylene	0.52	0.10	V-06	2.2	0.43	2	8/5/16 12:27	TPH

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	101	70-130	8/5/16 12:27
4-Bromofluorobenzene (2)	97.0	70-130	8/5/16 12:27

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: VP-5
Sample ID: 16G1248-05
Sample Matrix: Soil Gas
Sampled: 7/21/2016 13:51

Sample Description/Location:
Sub Description/Location:
Canister ID: 1114
Canister Size: 6 liter
Flow Controller ID: 4194
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -28
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -8.2
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.99	0.10		3.2	0.32	2	8/4/16 6:56	TPH
Ethylbenzene	0.28	0.10		1.2	0.43	2	8/4/16 6:56	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	8/4/16 6:56	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	8/4/16 6:56	TPH
Naphthalene	0.13	0.10		0.70	0.52	2	8/4/16 6:56	TPH
Toluene	1.9	0.10		7.2	0.38	2	8/4/16 6:56	TPH
1,2,4-Trimethylbenzene	0.69	0.10		3.4	0.49	2	8/4/16 6:56	TPH
1,3,5-Trimethylbenzene	0.16	0.10		0.80	0.49	2	8/4/16 6:56	TPH
m&p-Xylene	0.98	0.20		4.2	0.87	2	8/4/16 6:56	TPH
o-Xylene	0.43	0.10		1.9	0.43	2	8/4/16 6:56	TPH

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	90.1		70-130	8/4/16 6:56
4-Bromofluorobenzene (2)	66.4*	S-26	70-130	8/4/16 6:56

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ANALYTICAL RESULTS

Project Location: Cooks Country Store Feas.Test
Date Received: 7/26/2016
Field Sample #: Duplicate
Sample ID: 16G1248-06
Sample Matrix: Soil Gas
Sampled: 7/21/2016 13:50

Sample Description/Location:
Sub Description/Location:
Canister ID: 1165
Canister Size: 6 liter
Flow Controller ID: 4204
Sample Type: 30 min

Work Order: 16G1248
Initial Vacuum(in Hg): -28
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -4.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	0.56	0.10		1.8	0.32	2	8/4/16 7:38	TPH
Ethylbenzene	1.2	0.10		5.2	0.43	2	8/4/16 7:38	TPH
Isopropylbenzene (Cumene)	ND	0.25	L-03	ND	1.2	2	8/4/16 7:38	TPH
Methyl tert-Butyl Ether (MTBE)	ND	0.10		ND	0.36	2	8/4/16 7:38	TPH
Naphthalene	0.25	0.10		1.3	0.52	2	8/4/16 7:38	TPH
Toluene	19	0.10		70	0.38	2	8/4/16 7:38	TPH
1,2,4-Trimethylbenzene	1.2	0.10		5.7	0.49	2	8/4/16 7:38	TPH
1,3,5-Trimethylbenzene	0.34	0.10		1.7	0.49	2	8/4/16 7:38	TPH
m&p-Xylene	4.0	0.20		18	0.87	2	8/4/16 7:38	TPH
o-Xylene	1.5	0.10		6.5	0.43	2	8/4/16 7:38	TPH

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	93.2		70-130	8/4/16 7:38
4-Bromofluorobenzene (2)	68.4*	S-26	70-130	8/4/16 7:38

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G1248-02 [VP-2]	B155404	1.5	1	N/A	1000	400	300	08/04/16
16G1248-03 [VP-3]	B155404	1.5	1	N/A	1000	400	300	08/04/16
16G1248-04 [VP-4]	B155404	1.5	1	N/A	1000	400	300	08/04/16

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G1248-01 [VP-1]	B155405	1.5	200	5	1000	400	40	08/03/16
16G1248-05 [VP-5]	B155405	1.5	1	N/A	1000	400	300	08/03/16
16G1248-06 [Duplicate]	B155405	1.5	1	N/A	1000	400	300	08/03/16

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B155404 - TO-15 Prep											
Blank (B155404-BLK1)					Prepared & Analyzed: 08/04/16						
Benzene	ND	0.035									
Ethylbenzene	ND	0.035									
Isopropylbenzene (Cumene)	ND	0.089									
Methyl tert-Butyl Ether (MTBE)	ND	0.035									
Naphthalene	ND	0.035									
Toluene	ND	0.035									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	*7.83*				*8.00*		*97.8*	*70-130*			
LCS (B155404-BS1)					Prepared & Analyzed: 08/04/16						
Benzene	5.60				5.00		112	70-130			
Ethylbenzene	5.86				5.00		117	70-130			
Isopropylbenzene (Cumene)	1.40				1.27		110	70-130			
Methyl tert-Butyl Ether (MTBE)	5.22				5.00		104	70-130			
Naphthalene	4.51				5.00		90.1	70-130			
Toluene	6.23				5.00		125	70-130			
1,2,4-Trimethylbenzene	5.21				5.00		104	70-130			
1,3,5-Trimethylbenzene	5.07				5.00		101	70-130			
m&p-Xylene	12.1				10.0		121	70-130			
o-Xylene	6.48				5.00		130	70-130			V-06
Surrogate: 4-Bromofluorobenzene (1)	*8.22*				*8.00*		*103*	*70-130*			
Batch B155405 - TO-15 Prep											
Blank (B155405-BLK1)					Prepared & Analyzed: 08/03/16						
Benzene	ND	0.035									
Ethylbenzene	ND	0.035									
Isopropylbenzene (Cumene)	ND	0.089									L-03
Methyl tert-Butyl Ether (MTBE)	ND	0.035									
Naphthalene	ND	0.035									
Toluene	ND	0.035									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	*7.16*				*8.00*		*89.4*	*70-130*			

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B155405 - TO-15 Prep											
LCS (B155405-BS1)					Prepared & Analyzed: 08/03/16						
Benzene	5.45				5.00		109	70-130			
Ethylbenzene	5.53				5.00		111	70-130			
Isopropylbenzene (Cumene)	0.869	0.13		0.62				70-130			L-03
Methyl tert-Butyl Ether (MTBE)	5.03				5.00		101	70-130			
Naphthalene	5.03				5.00		101	70-130			
Toluene	5.15				5.00		103	70-130			
1,2,4-Trimethylbenzene	6.05				5.00		121	70-130			
1,3,5-Trimethylbenzene	5.77				5.00		115	70-130			
m&p-Xylene	11.6				10.0		116	70-130			
o-Xylene	6.01				5.00		120	70-130			
Surrogate: 4-Bromofluorobenzene (1)	*7.80*				*8.00*		*97.6*	*70-130*			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
DL-03	Elevated reporting limit due to matrix.
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
S-26	Surrogate outside of control limits.
V-06	Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Benzene	AIHA,FL,NJ,NY,VA,ME
Ethylbenzene	AIHA,FL,NJ,NY,VA,ME
Isopropylbenzene (Cumene)	AIHA,NJ,NY,ME
Methyl tert-Butyl Ether (MTBE)	AIHA,FL,NJ,NY,VA,ME
Naphthalene	NY,ME
Toluene	AIHA,FL,NJ,NY,VA,ME
1,2,4-Trimethylbenzene	AIHA,NJ,NY,ME
1,3,5-Trimethylbenzene	AIHA,NJ,NY,ME
m&p-Xylene	AIHA,FL,NJ,NY,VA,ME
o-Xylene	AIHA,FL,NJ,NY,VA,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

116G-1748

http://www.contestlabs.com

Doc #378 Rev 0 5/8/15

CHAIN OF CUSTODY RECORD (AIR)

39 Spruce Street
East Longmeadow, MA 01028

Company Name: Mountain Research LLC
Address: 825 25th St. Altoona PA
Phone: 949 2034
Project Name: Cook's country Store
Project Location: Robertsdale PA
Project Number: 4547.15.01 PO # 22174
Project Manager: Mike Crowe
Con-Test Bid:
Invoice Recipient:
Sampled By: Leah Mullo

Requested Turnaround Time
7-Day ☒ 10-Day ☐
Other:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☐
Other:
Enhanced Data Package Required: ☐
Email To: MCrowe@mountainresearch.com
Fax To #:

ANALYSIS REQUESTED

Please fill out completely, sign, date and retain the yellow copy for your records

Summa canisters and flow controllers must be returned within 15 days of receipt or rental fees will apply

For summa canister and flow controller information please refer to Con-Test's Air Media Agreement

Lab Use	Client Use	Collection Data		Duration	Flow Rate	Matrix	Volume	Benzene, Ethylene, Toluene, Xylenes, Naphthalene, 124TMB, 135TMB, MTBE				" Hg				
Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Total Minutes Sampled	m³/min L/min	Code	Liters m³					Initial Pressure	Final Pressure	Lab Receipt Pressure	Summa Can ID	Flow Controller ID
01	VP-1	7/21/16 1330	7/21/16 1400	30		SG		X				-30	-5	-1.9	1315	4265
02	VP-2	1330	1354	24								-27	-5	-1.7	1851	4205
03	VP-3	1329	1357	28								-29	-5	-1.7	1785	4304
04	VP-4	1328	1355	27								-28	-5	-2.8	1305	4283
05	VP-5	1327	1351	24								-28	-5	-2.9	1114	4194
06	Duplicate	1330	1350	20								-28	-5	-1.9	1105	4204

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes:
SG = SOIL GAS
IA = INDOOR AIR
AMB = AMBIENT
SS = SUB SLAB
D = DUP
BL = BLANK
O = Other_____

Relinquished by: (signature) Leah M Mullo	Date/Time: 7/21/16 15:20
Received by: (signature) Mike Mast	Date/Time: 7/26/16 1207
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements
MA
CT
Other

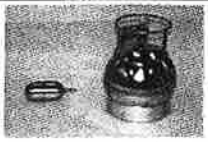
Special Requirements
☐ MA MCP Required
☐ CT RCP Required
☐ Enhanced Data Package Required

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Table of Contents



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39 Spruce St.
East Longmeadow, MA.
01028
P: 413-525-2332
F: 413-525-6405

AIR Only Receipt Checklist

CLIENT NAME Mountain Research RECEIVED BY: BLF DATE: 7/26/16

1) Was the chain(s) of custody relinquished and signed? Yes X No ____

2) Does the chain agree with the samples? Yes X No ____
If not, explain:

3) Are all the samples in good condition? Yes X No ____
If not, explain:

4) Are there any samples "On Hold"? Yes ____ No X Stored where: ____

5) Are there any RUSH or SHORT HOLDING TIME samples? Yes ____ No X
Who was notified ____ Date ____ Time ____

6) Location where samples are stored: Air lab

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: ____

7) Number of cans Individually Certified or Batch Certified? None

Containers received at Con-Test

		# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)		6	6L
Tedlar Bags			
TO-17 Tubes			
Regulators		6	30 min
Restrictors			
Hg/Hopcalite Tube (NIOSH 6009)			
(TO-4A/ TO-10A/TO-13) PUFs			
PCB Florisil Tubes (NIOSH 5503)			
Air cassette			
PM 2.5/PM 10			
TO-11A Cartridges			
Other			

Unused Summas/PUF Media:

Unused Regulators:

1) Was all media (used & unused) checked into the WASP?

2) Were all returned summa cans, Restrictors & Regulators and PUF's documented as returned in the Air Lab Inbound/Outbound Excel Spreadsheet?

Laboratory Comments:

		1315	1785	1114					4305	4304	4194				
		1851	1305	1165					4205	4283	4204				

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The coolers'/boxes' custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	NA	
4) Cooler Temperature is acceptable.	NA	
5) Cooler Temperature is recorded.	NA	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) Samples are received within Holding Time.	T	
10) Sample containers have legible labels.	T	
11) Containers/media are not broken or leaking and valves and caps are closed tightly.	T	
12) Sample collection date/times are provided.	T	
13) Appropriate sample/media containers are used.	T	
14) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
15) Trip blanks provided if applicable.	T	

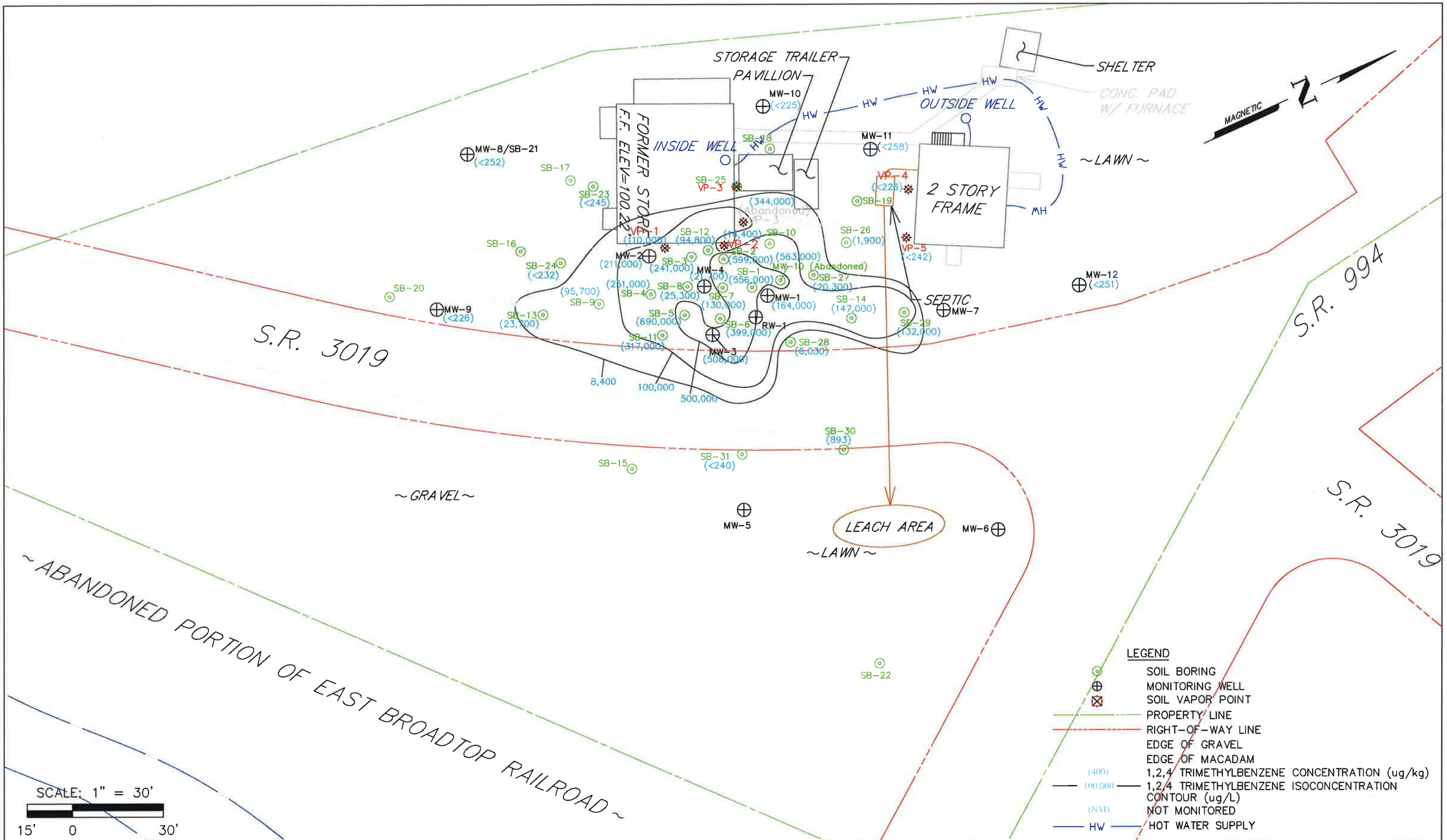
Who notified of False statements? **Date/Time:**

Doc #278 Rev. 5 October 2014 **Log-In Technician Initials:** **Date/Time:**

RLF 7/26/16 1207

APPENDIX G

SOIL ISOCONCENTRATION MAPS



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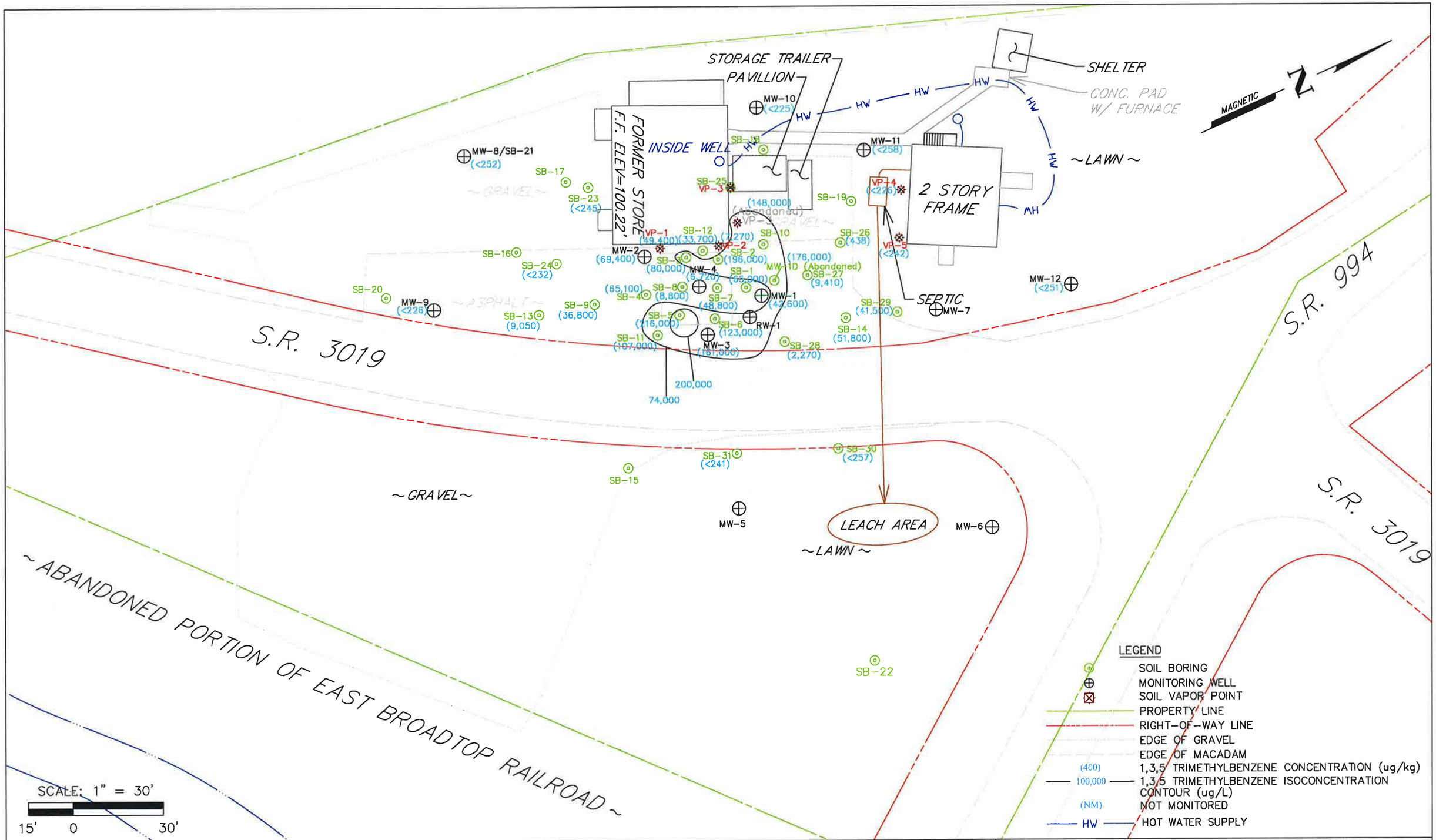
Drawn By: JMB 8-10-16
Submitted By:
Project Manager: M.C.
Checked By: MRC

4547.15.01

H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\AUTO CAD\2016\SOILS (06-21-16)\124 TRI SOIL.dwg

COOK'S COUNTY STORE
21042 Cooks Road
Robertsdale, PA

1,2,4-TRIMETHYLBENZENE SOIL ISOCONCENTRATION MAP (UNSATURATED)



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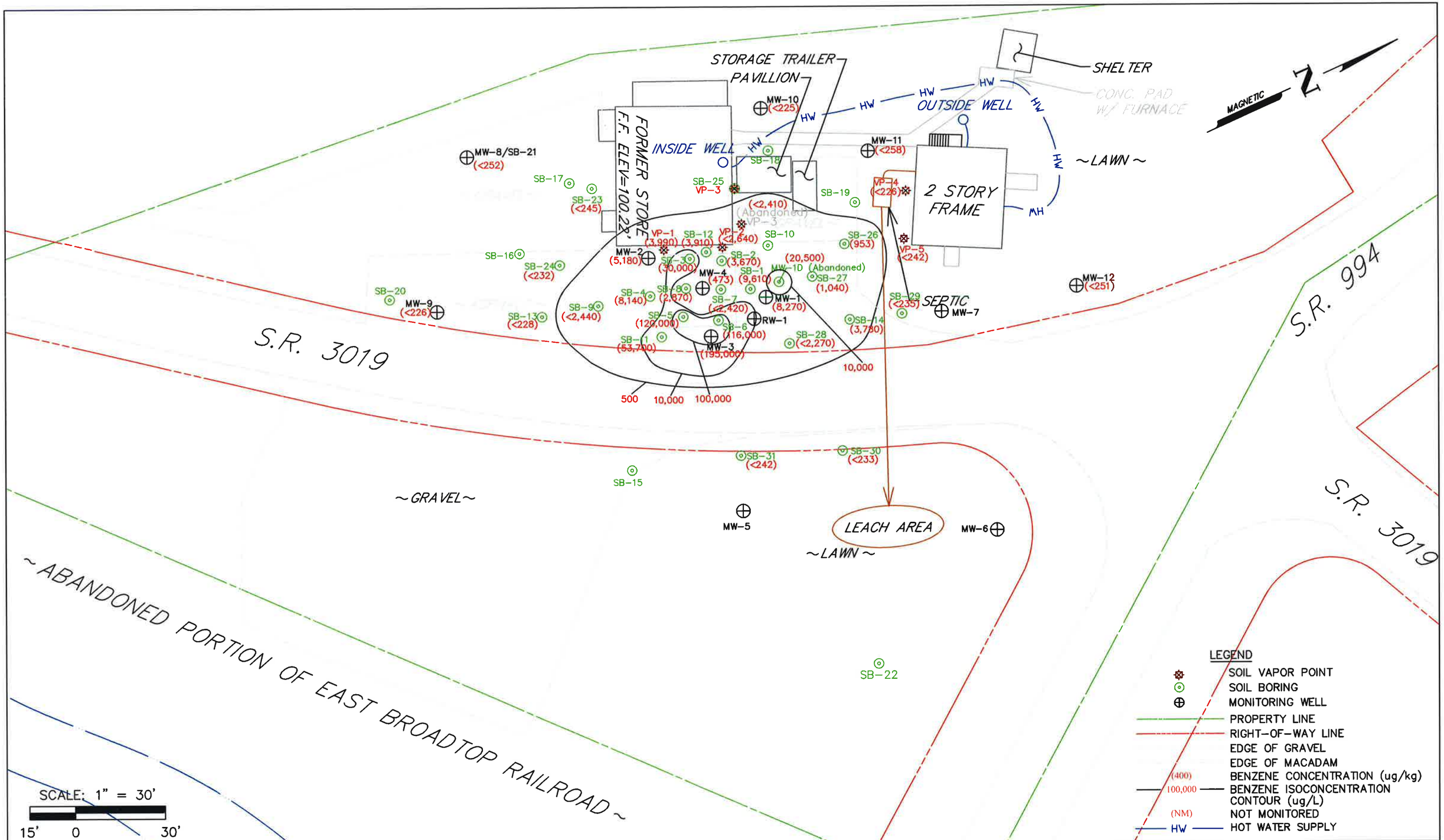
1,3,5-TRIMETHYLBENZENE SOIL ISOCONCENTRATION MAP (UNSATURATED)



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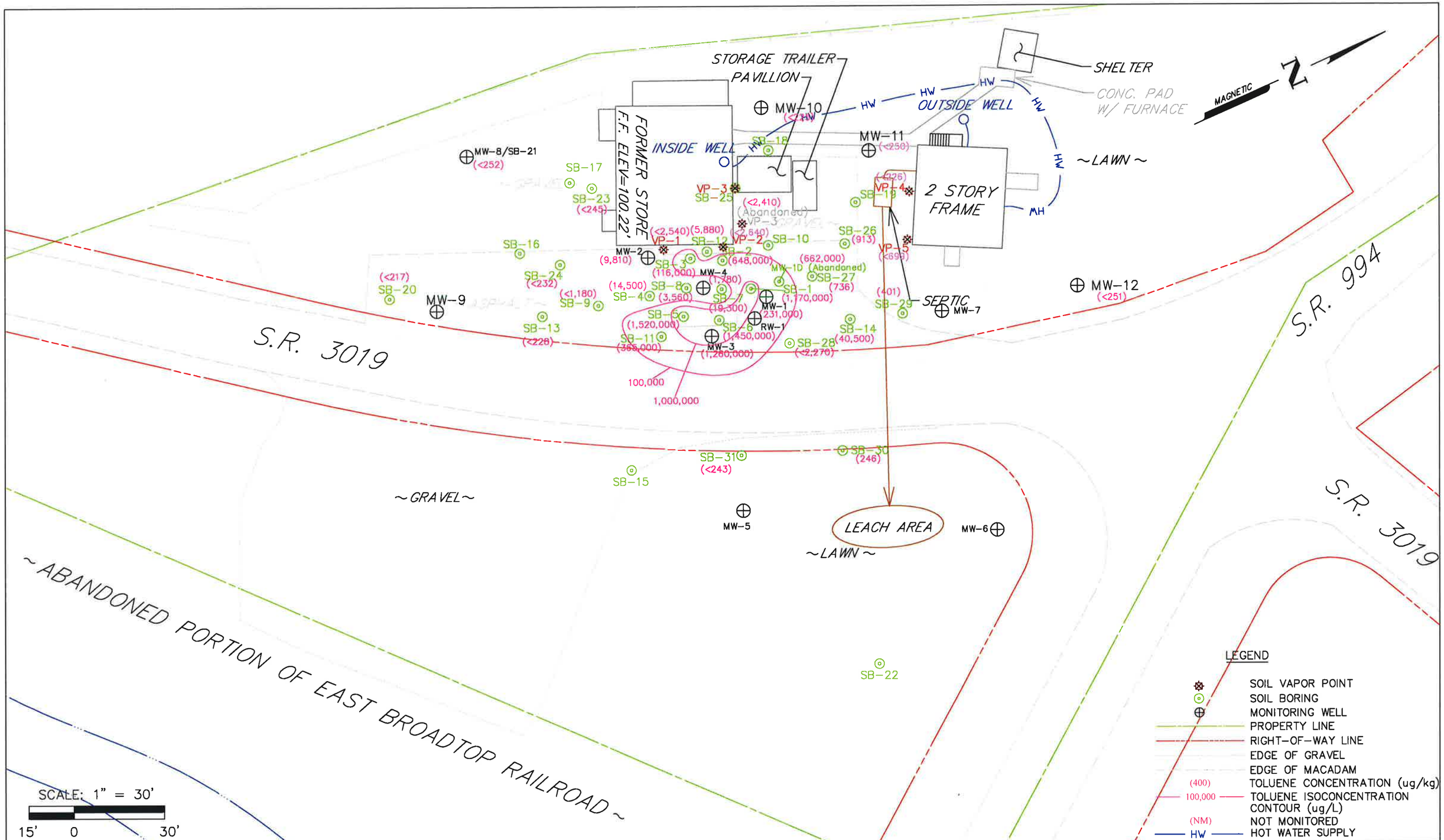
BENZENE SOIL ISOCONCENTRATION MAP (UNSATURATED)



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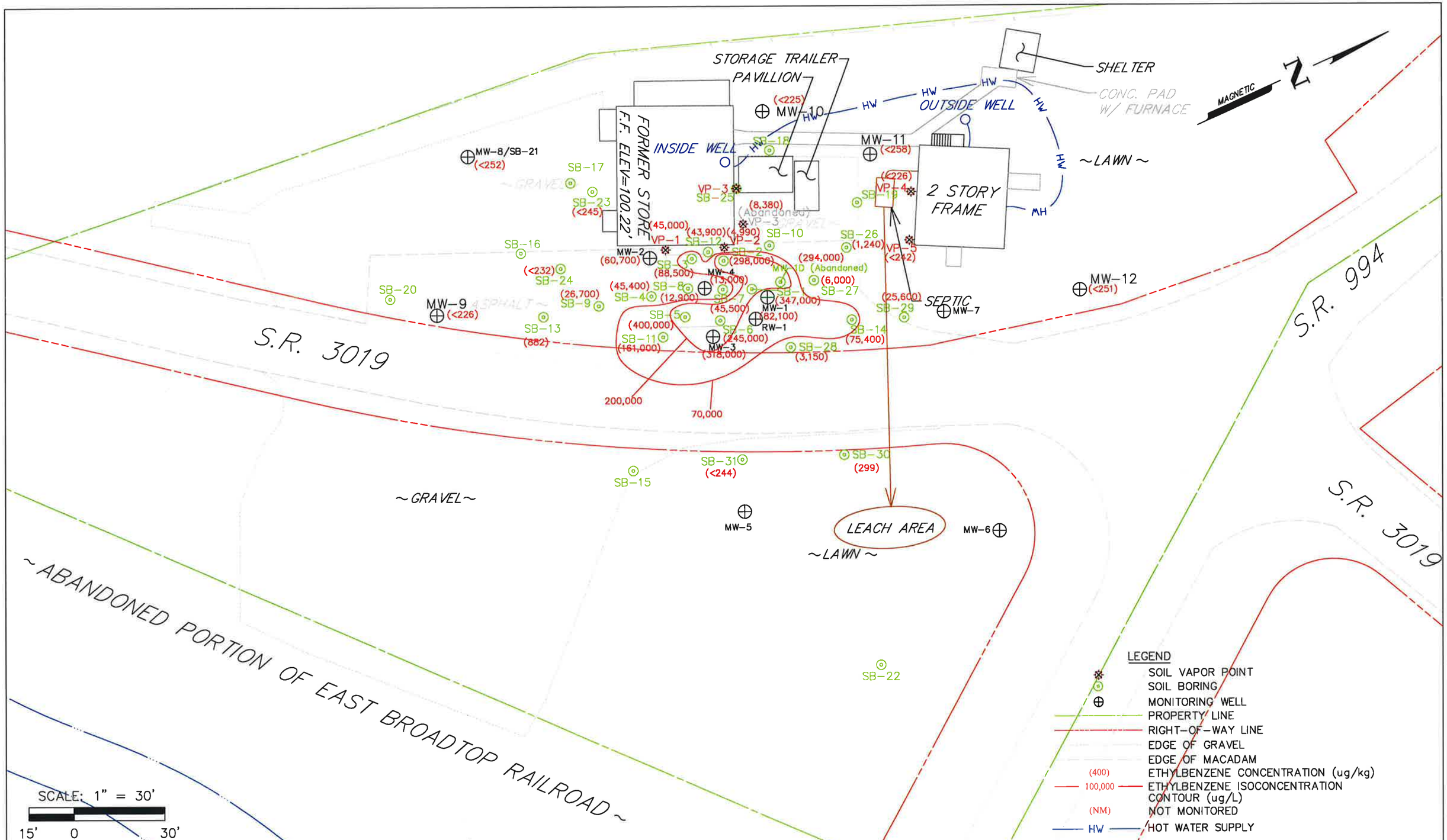
TOLUENE SOIL ISOCONCENTRATION MAP (UNSATURATED)



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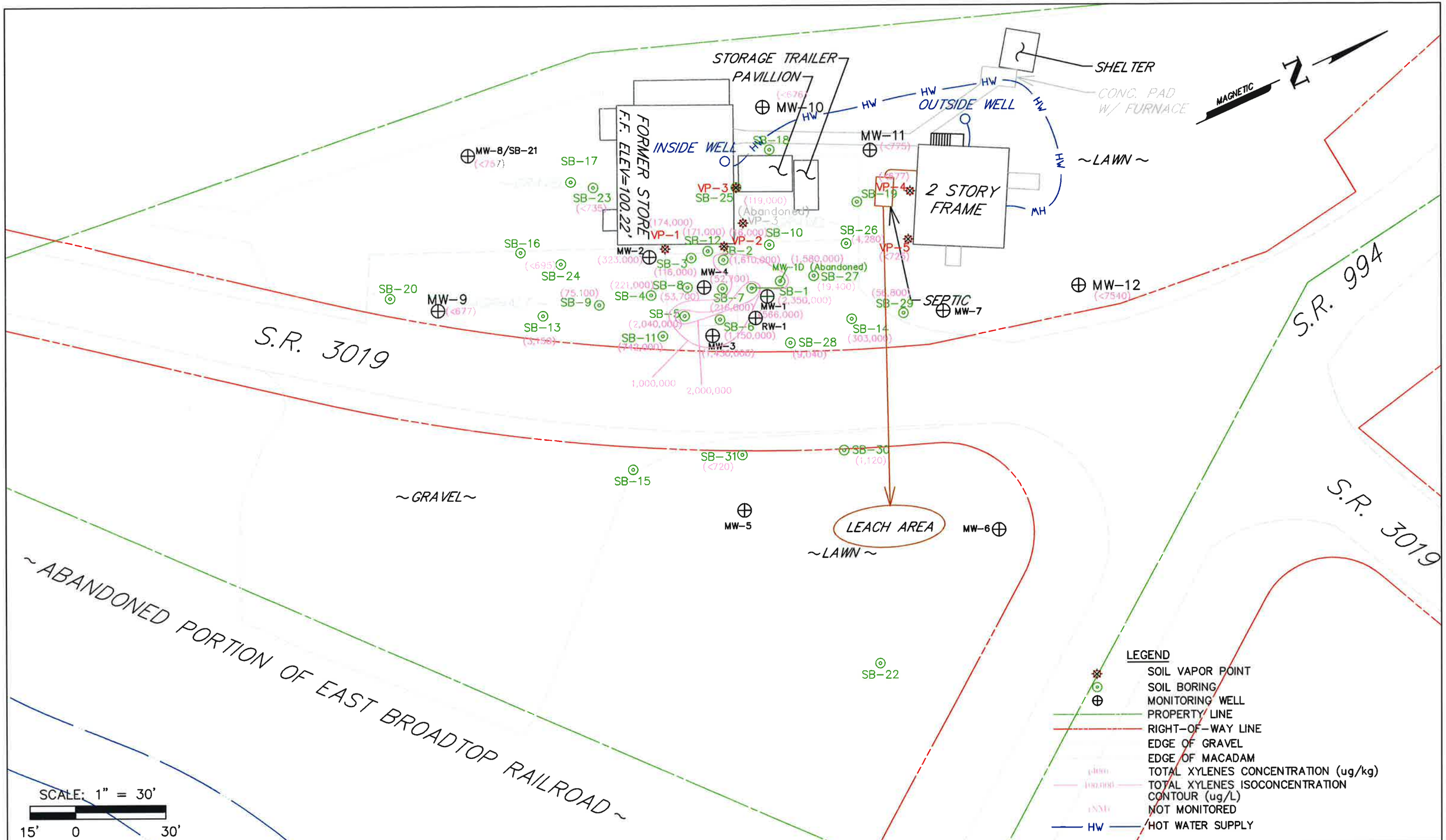
ETHYLBENZENE SOIL ISOCONCENTRATION MAP (UNSATURATED)



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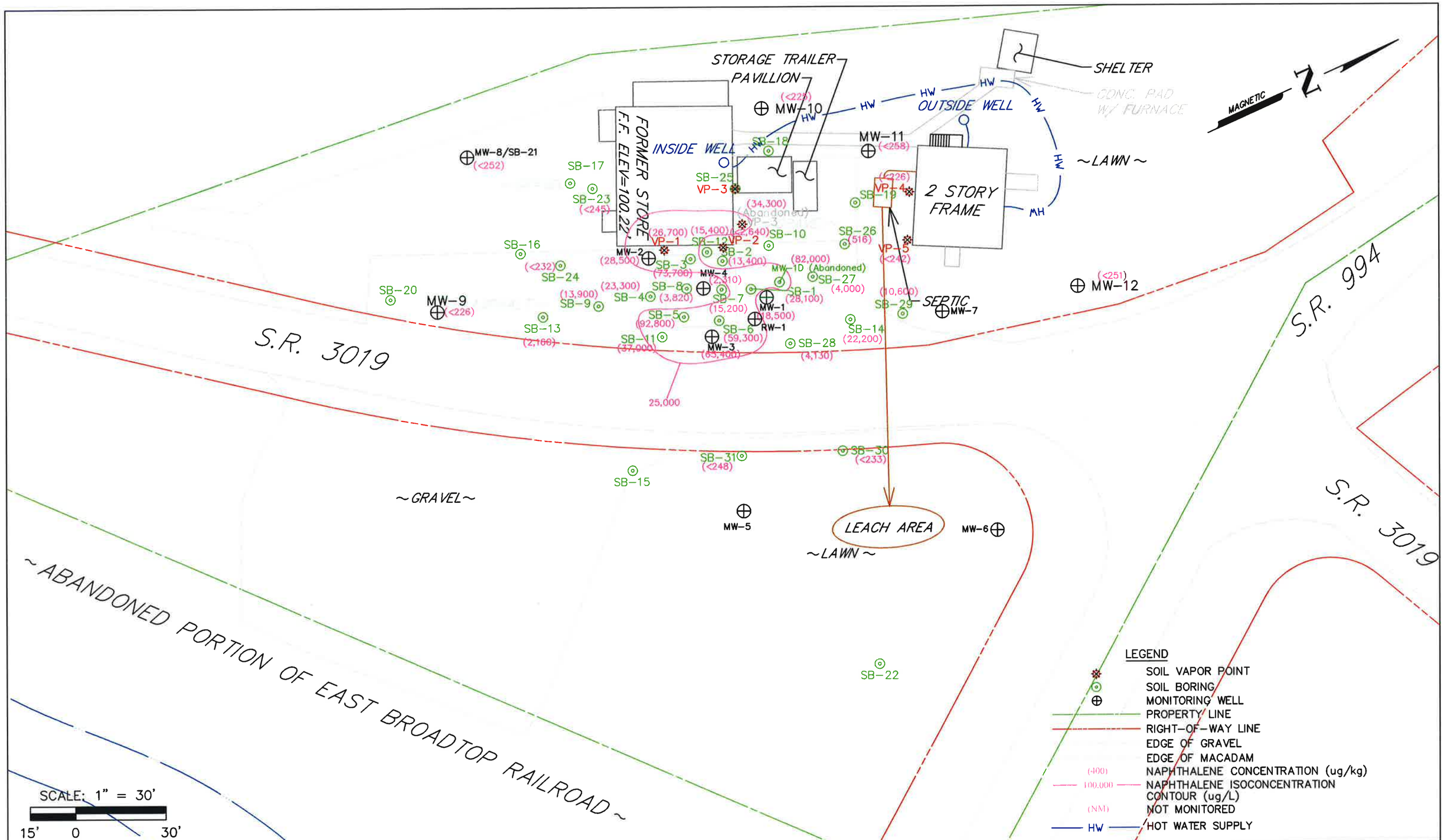
TOTAL XYLENES SOIL ISOCONCENTRATION MAP (UNSATURATED)



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Checked By: MRC

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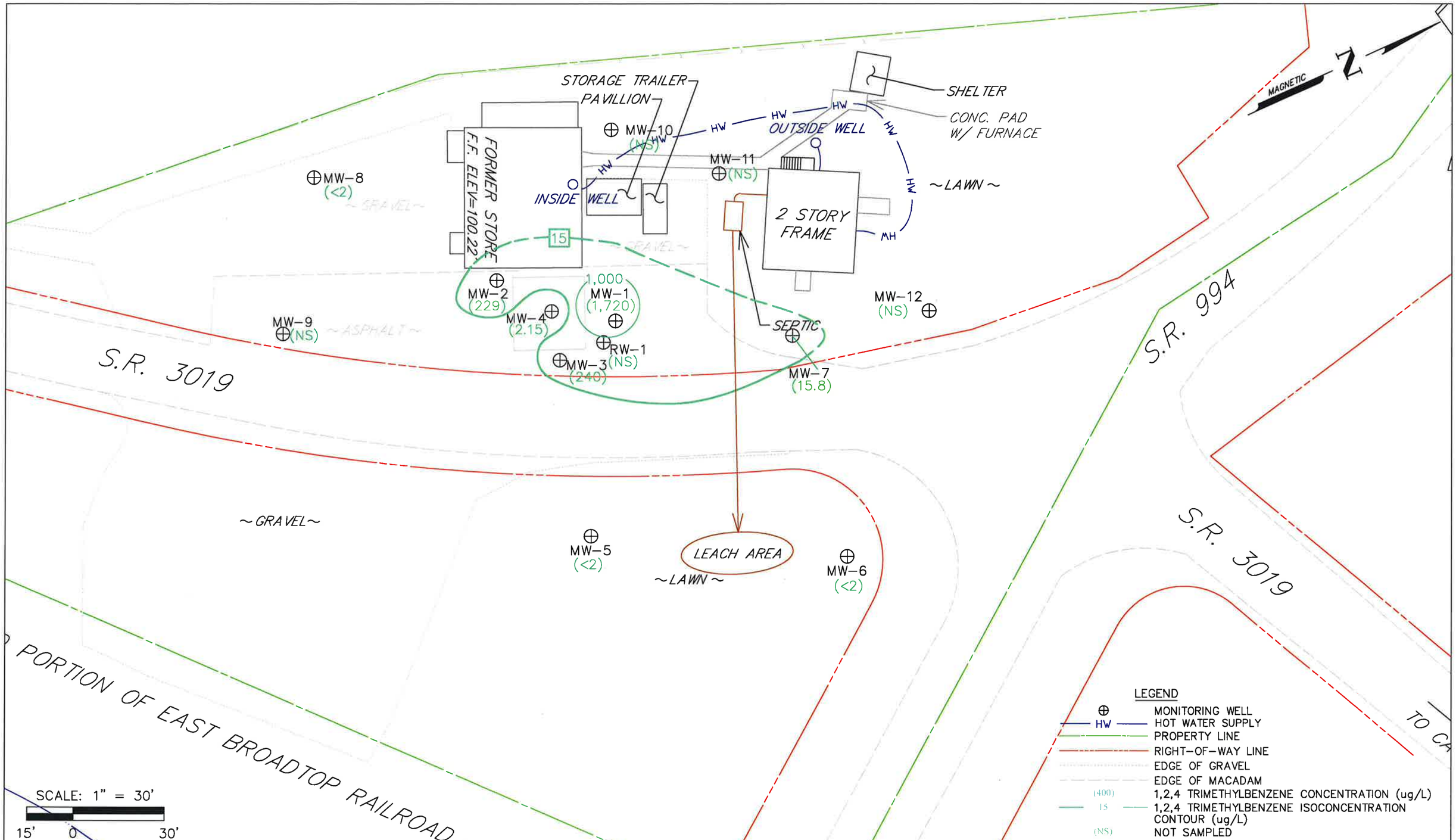
NAPHTHALENE SOIL ISOCONCENTRATION MAP (UNSATURATED)

APPENDIX H

GROUNDWATER ISOCONCENTRATION MAPS



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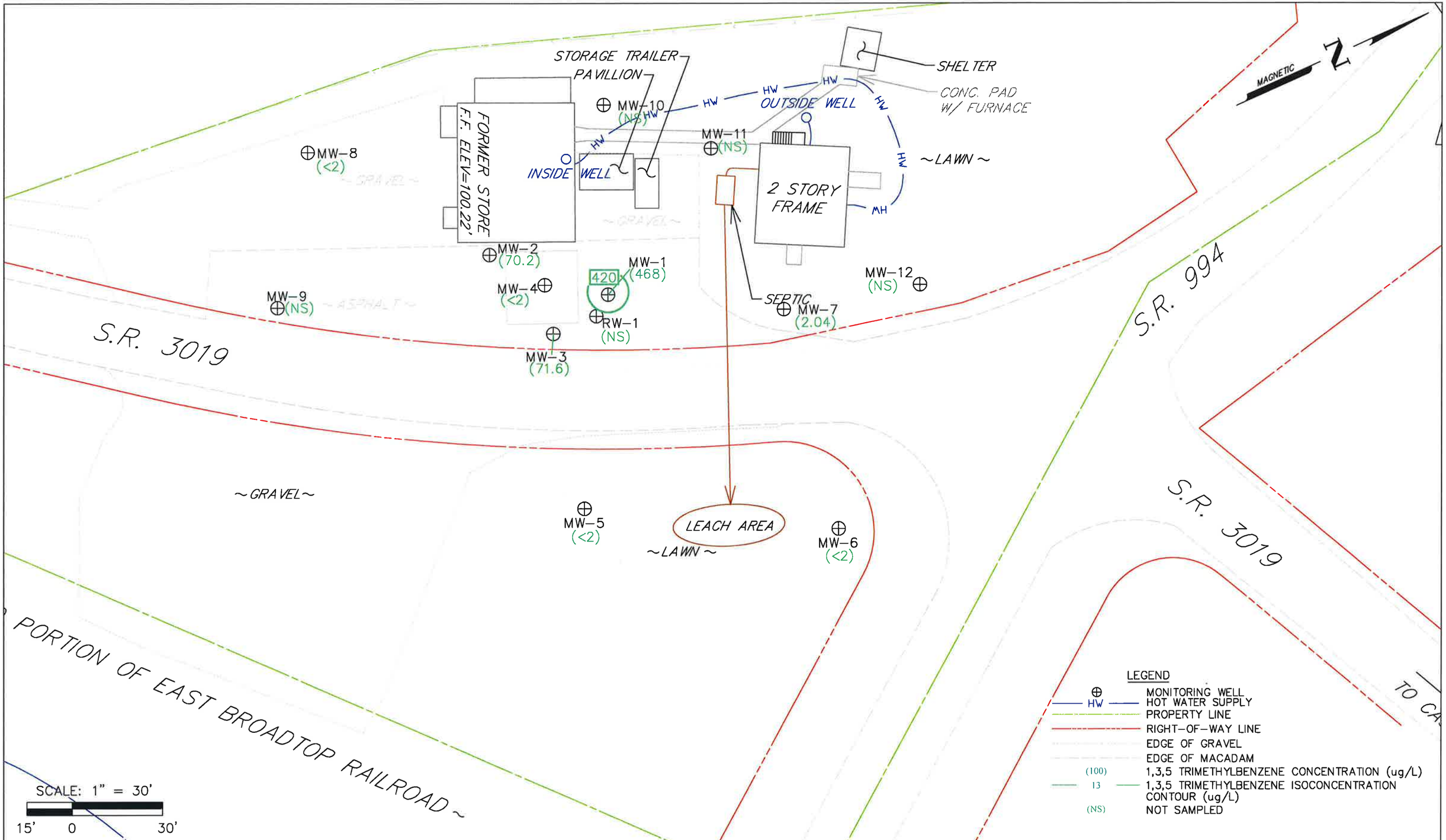
Robertsdale, PA

1,2,4-TRIMETHYLBENZENE ISOCONCENTRATION MAP

February 2, 2016



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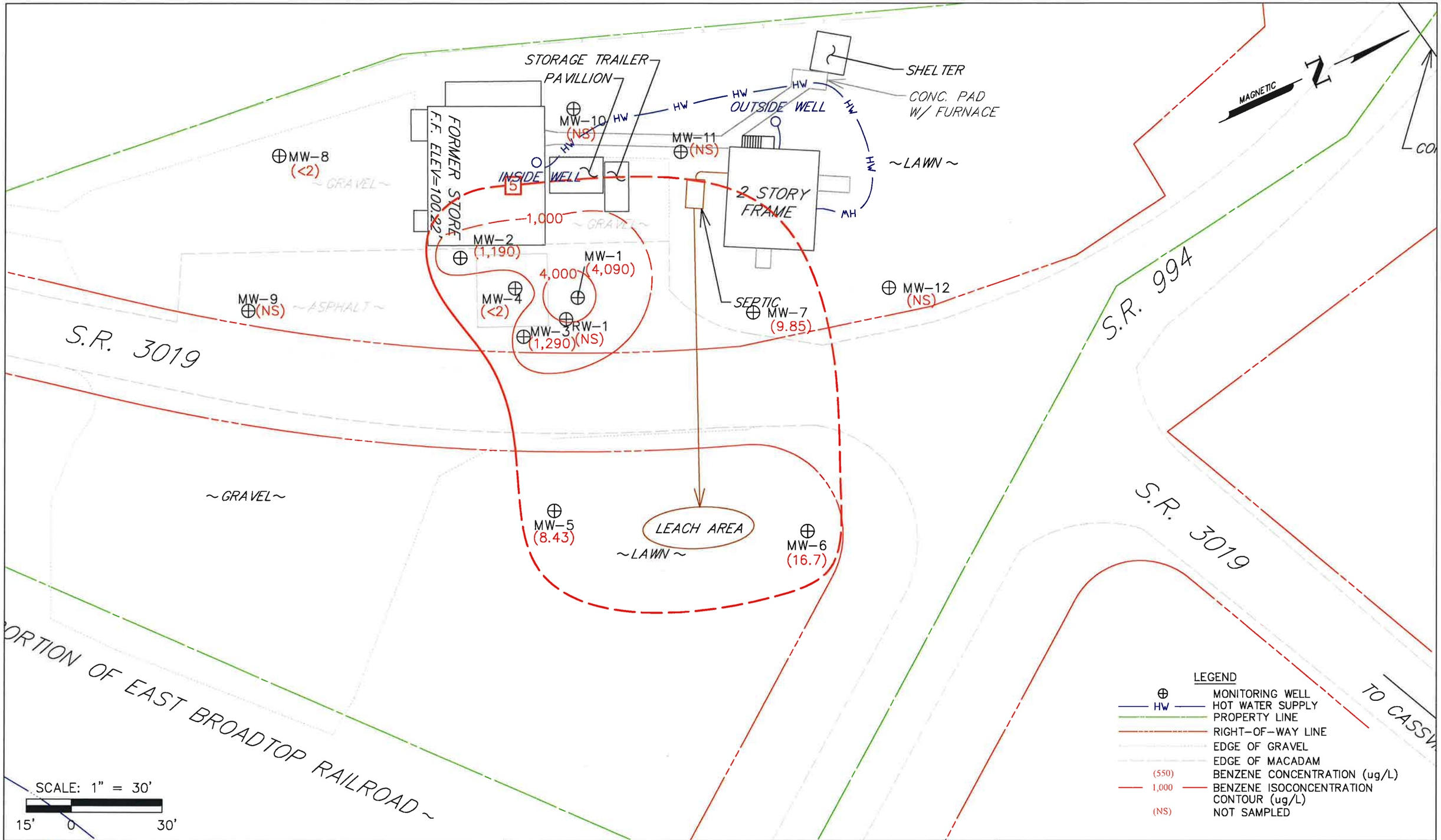
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

1,3,5-TRIMETHYLBENZENE ISOCONCENTRATION MAP

February 2, 2016



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COOKS COUNTY STORE
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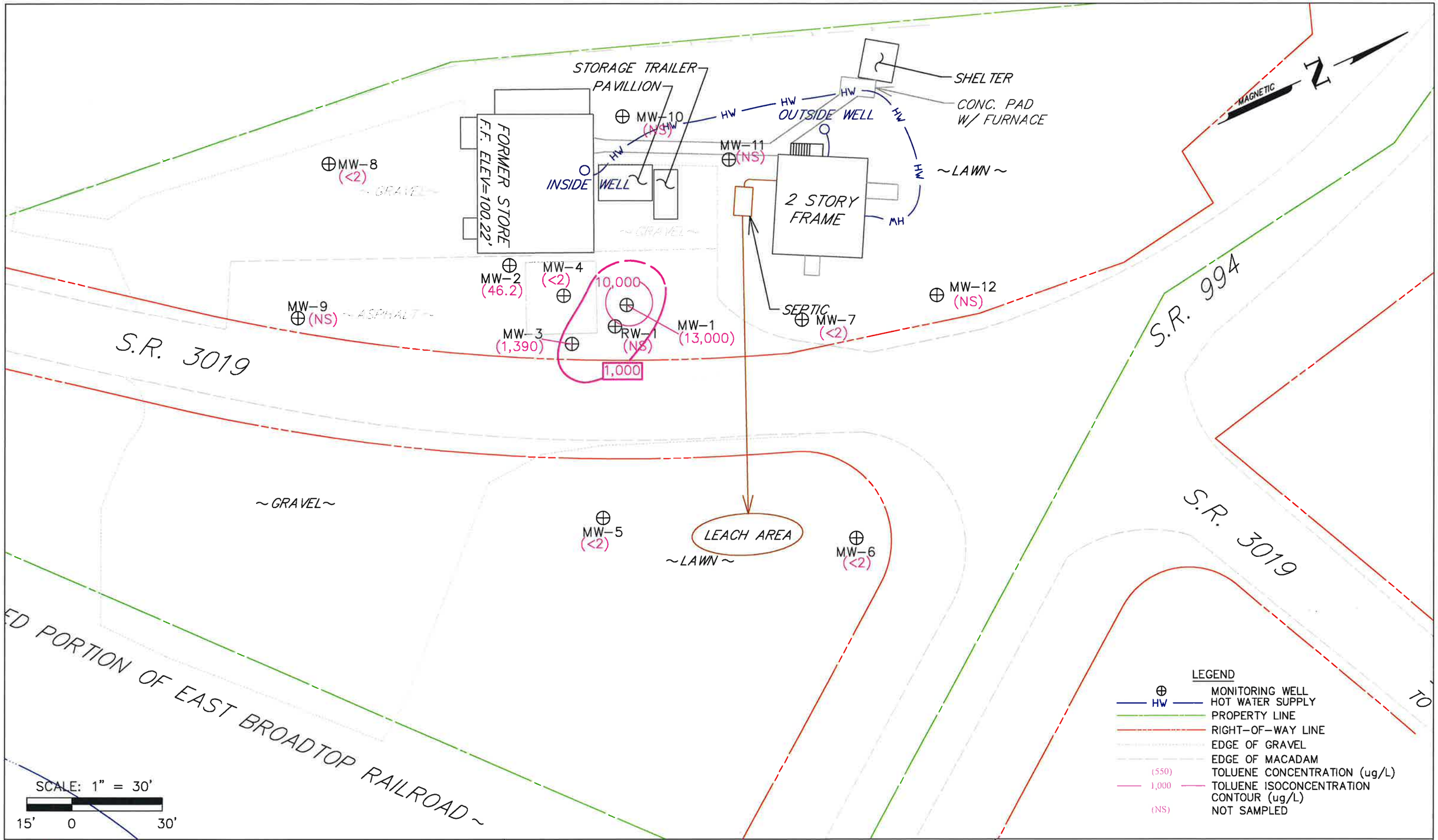
BENZENE ISOCONCENTRATION MAP

February 2, 2016



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Drawn By: JMB 8-10-16
Submitted By:
Project Manager: M.C.
Checked By: MRC

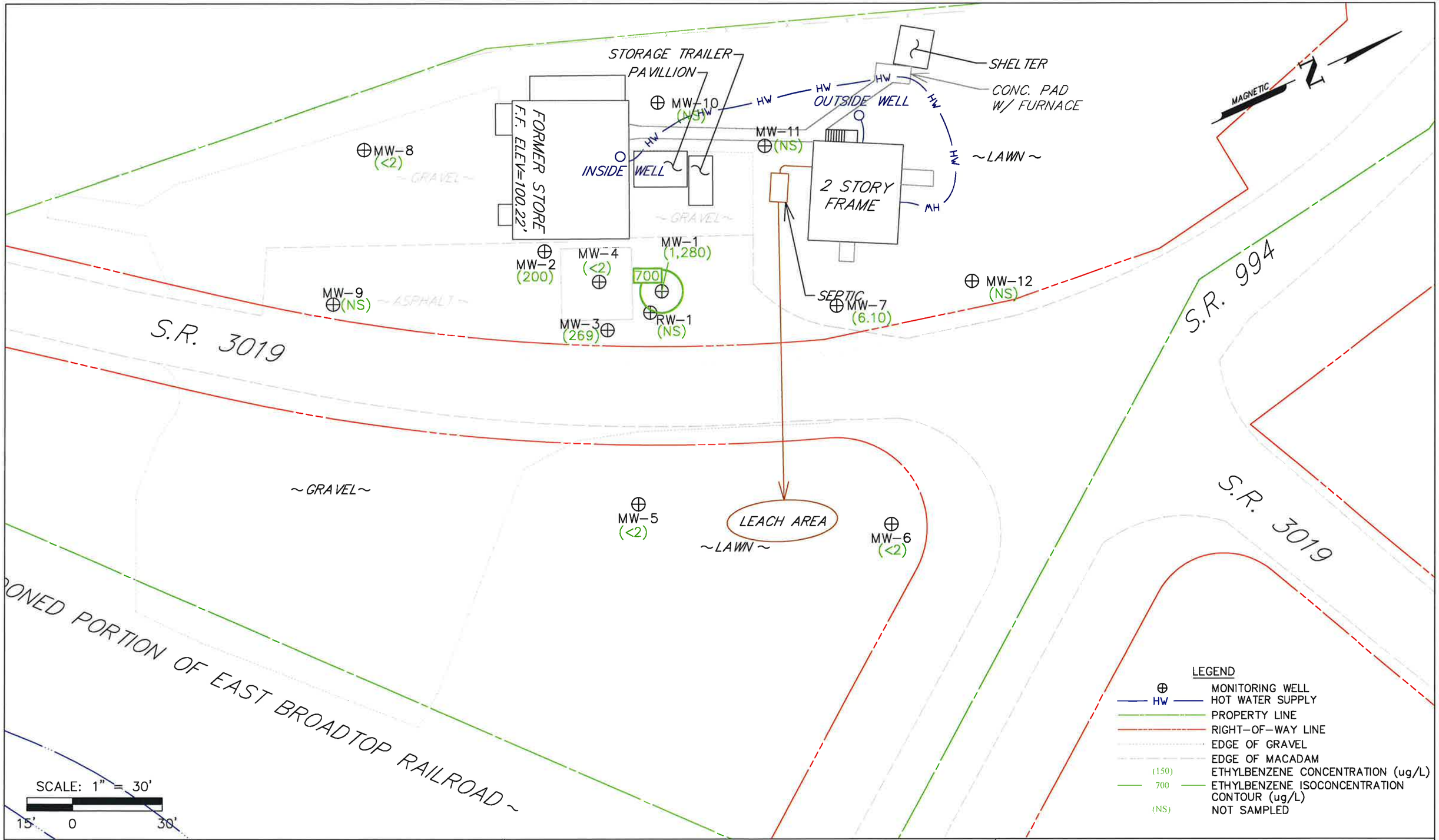
4547.15.01

H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\AUTO CAD\2016\TOL (2-2-16).dwg

COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

TOLUENE ISOCONCENTRATION MAP

February 2, 2016



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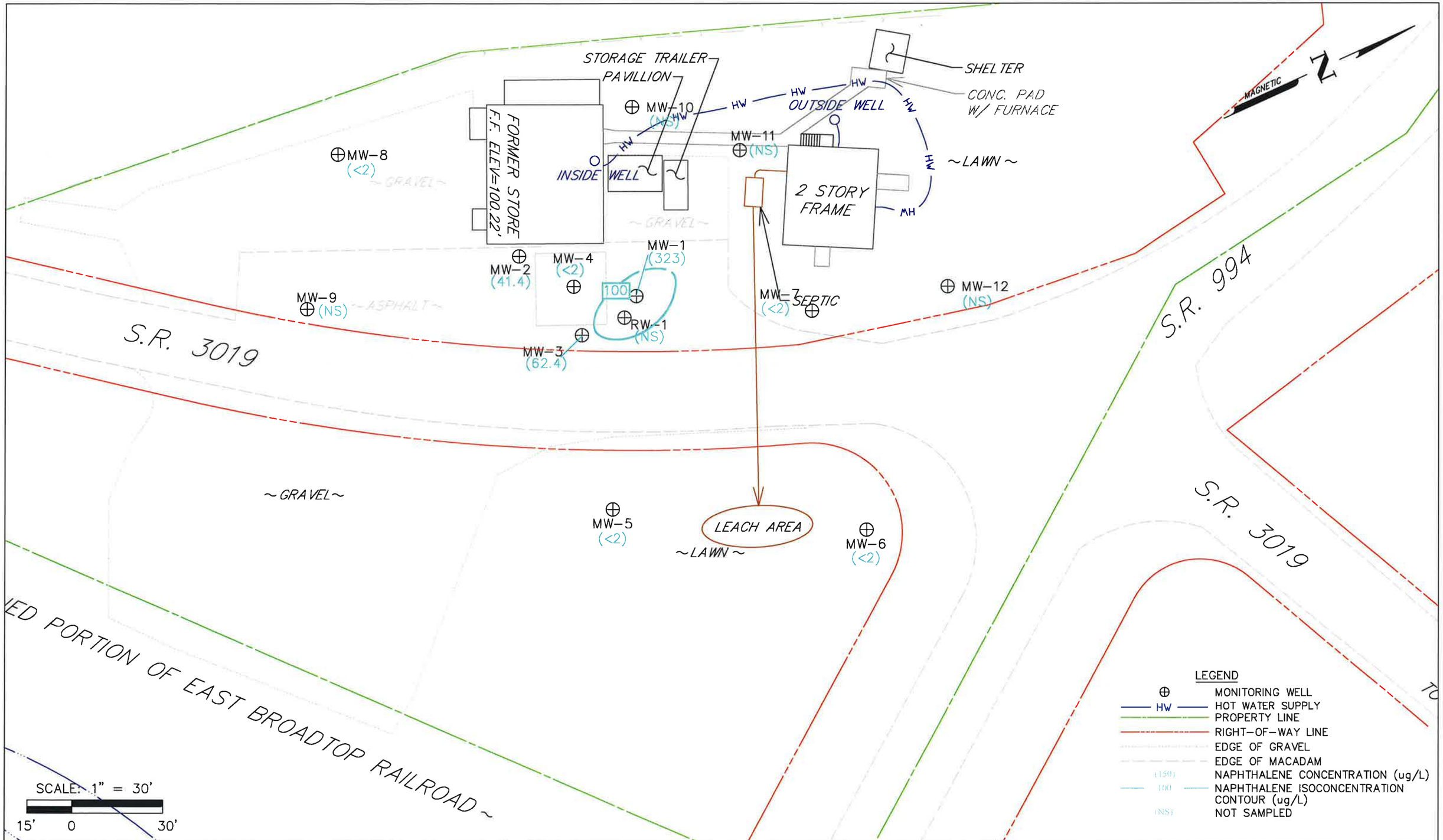
COOK'S COUNTY STORE
21042 Cooks Road
Robertsdale, PA

ETHYLBENZENE ISOCONCENTRATION MAP

February 2, 2016



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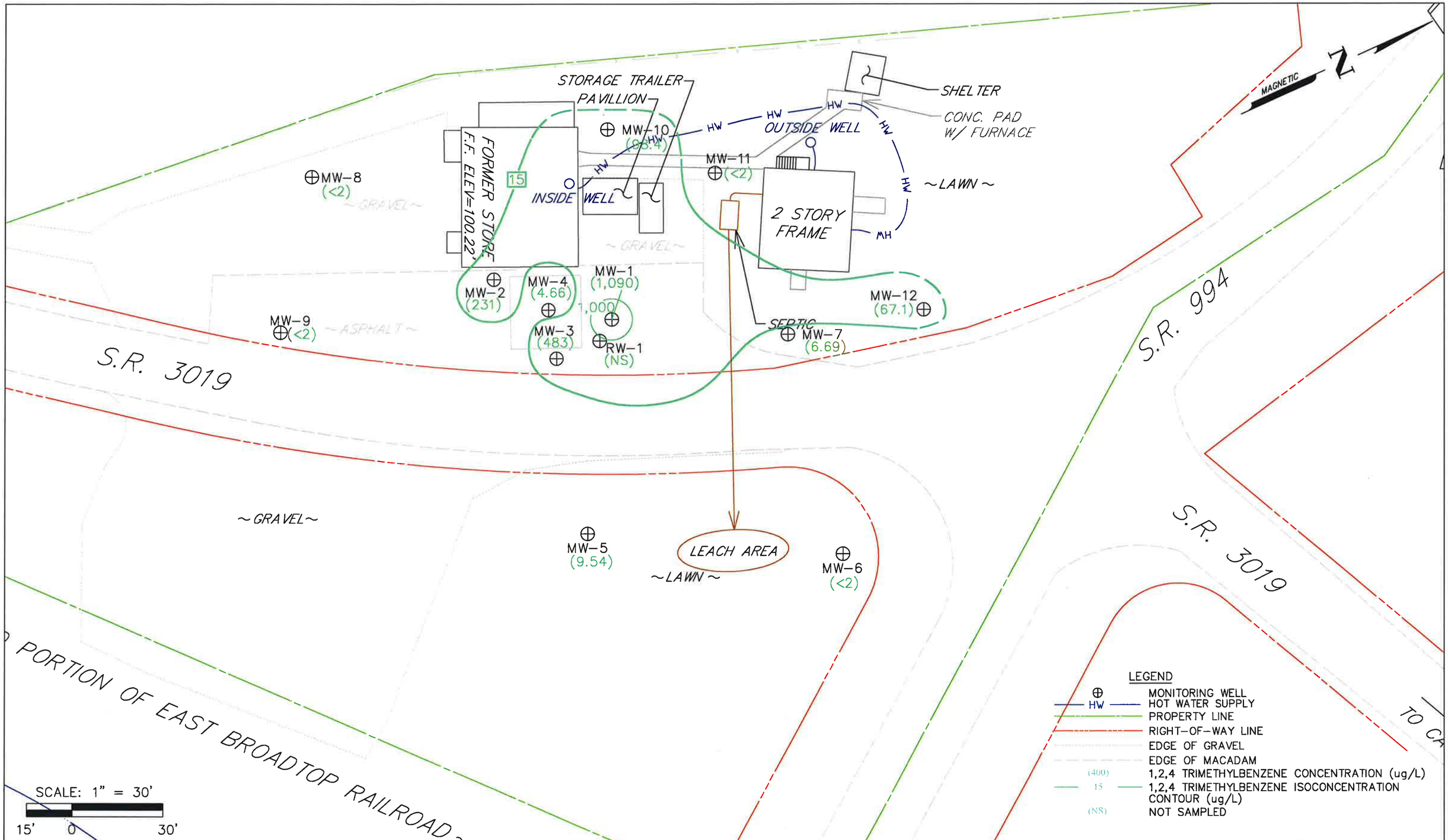
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

NAPHTHALENE ISOCONCENTRATION MAP

February 2, 2016



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Drawn By: JMB 8-9-16
Submitted By:
Project Manager: M.C.
Checked By: MRC

4547.15.01

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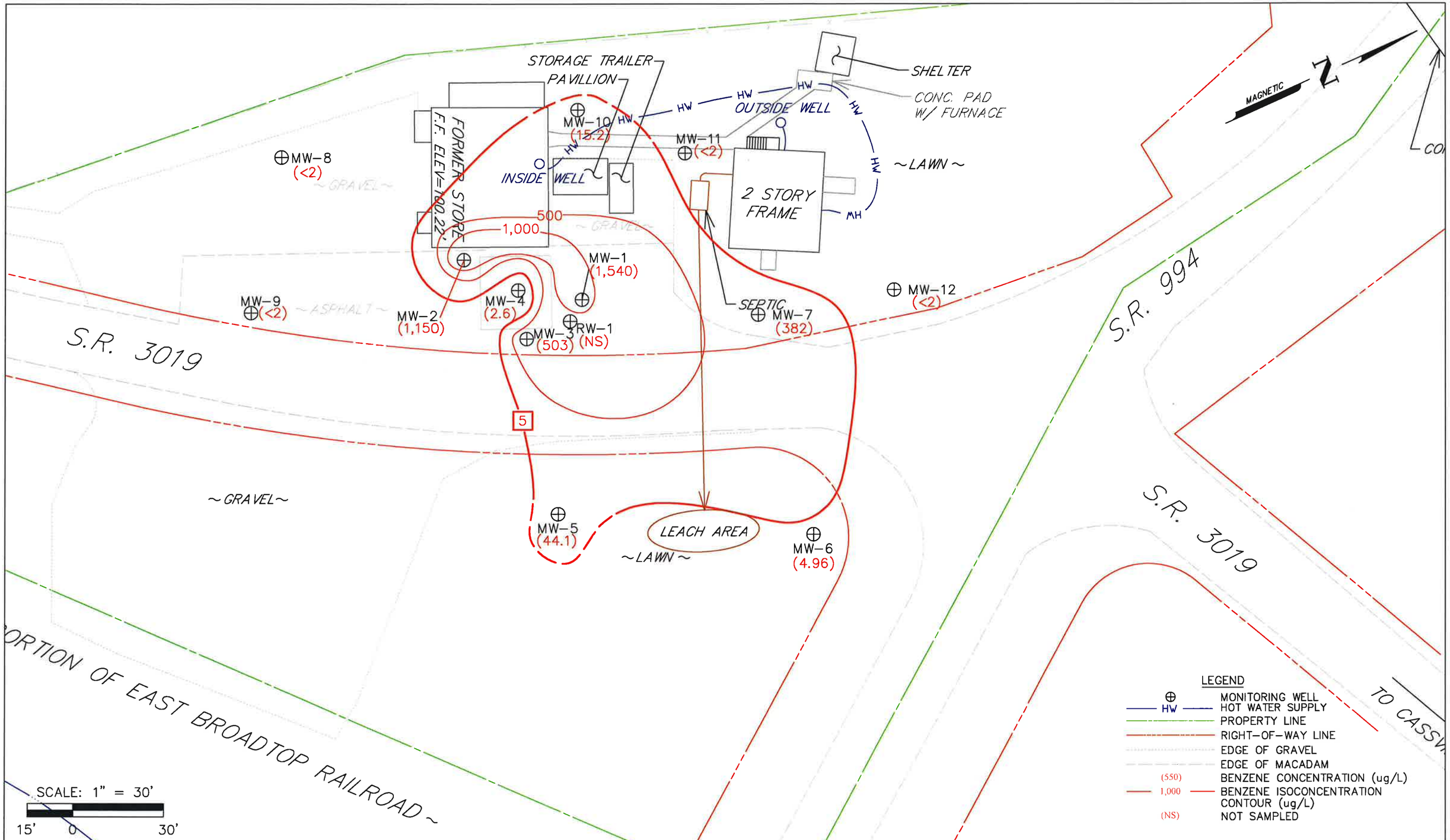
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

1,2,4-TRIMETHYLBENZENE ISOCONCENTRATION MAP

May 10, 2016



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Checked By: MRC

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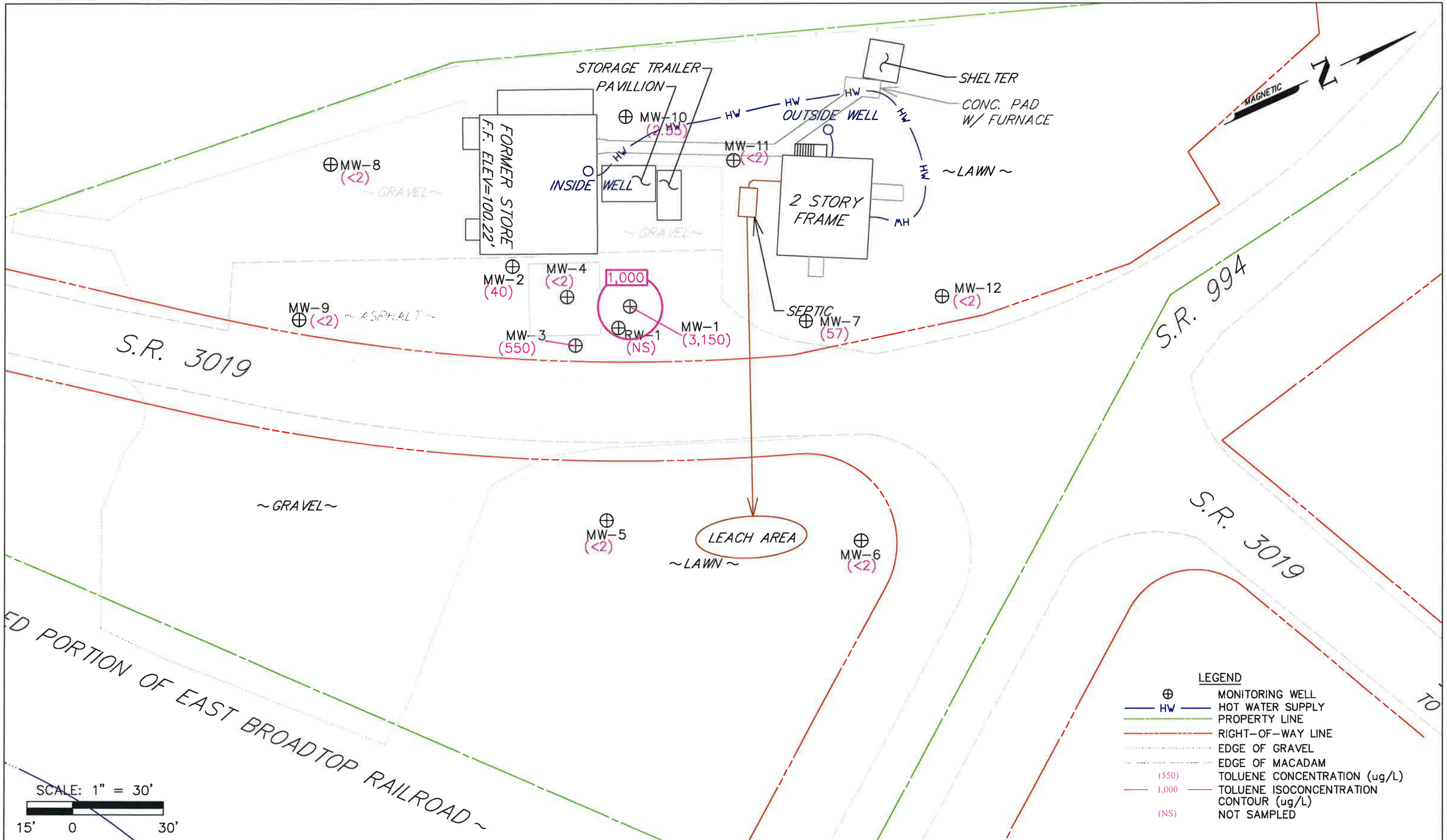
H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\AUTO CAD\2016\BENZ (5-10-16).dwg

COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

BENZENE ISOCONCENTRATION MAP

May 10, 2016



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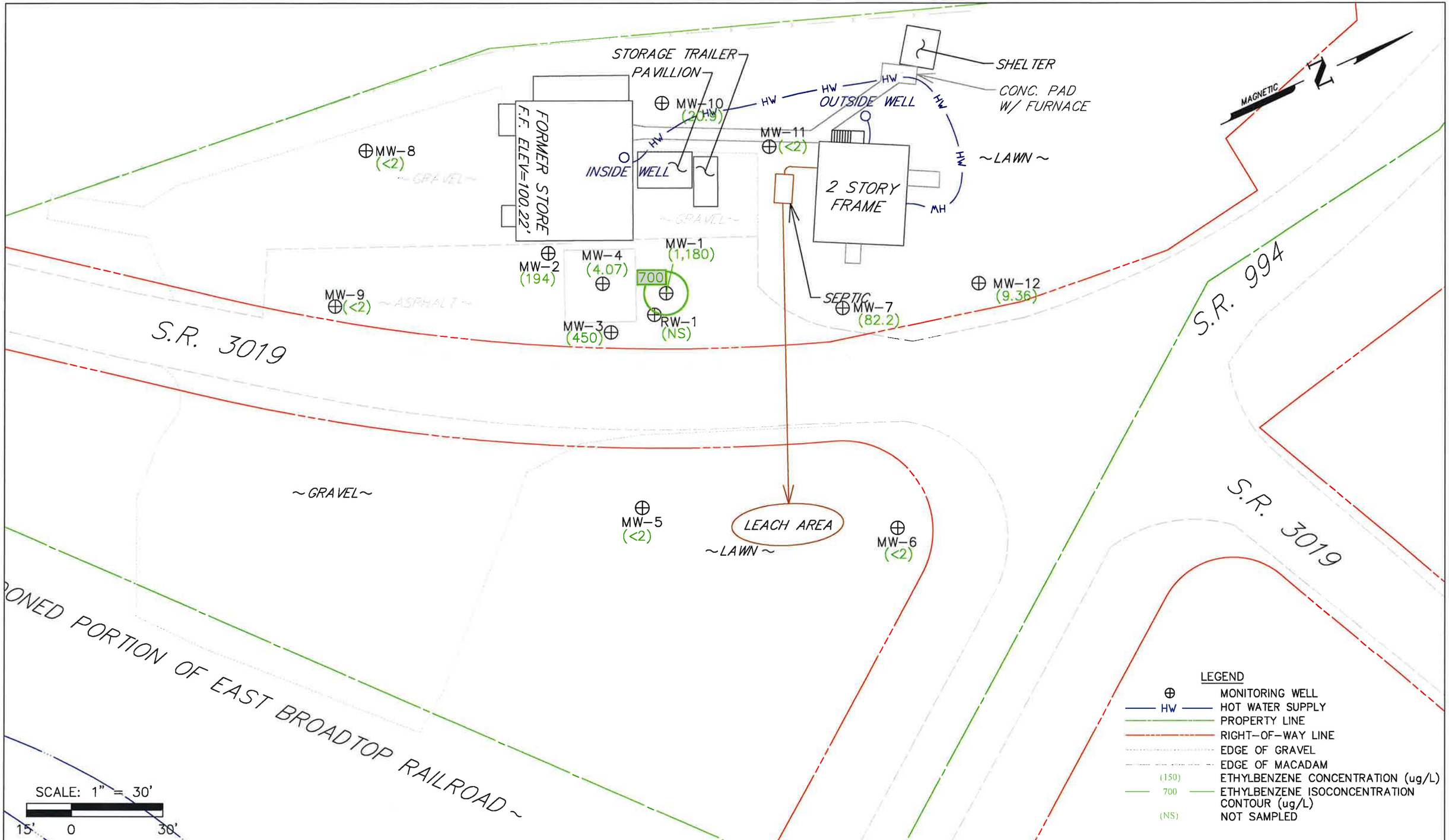
COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

TOLUENE ISOCONCENTRATION MAP

May 10, 2016



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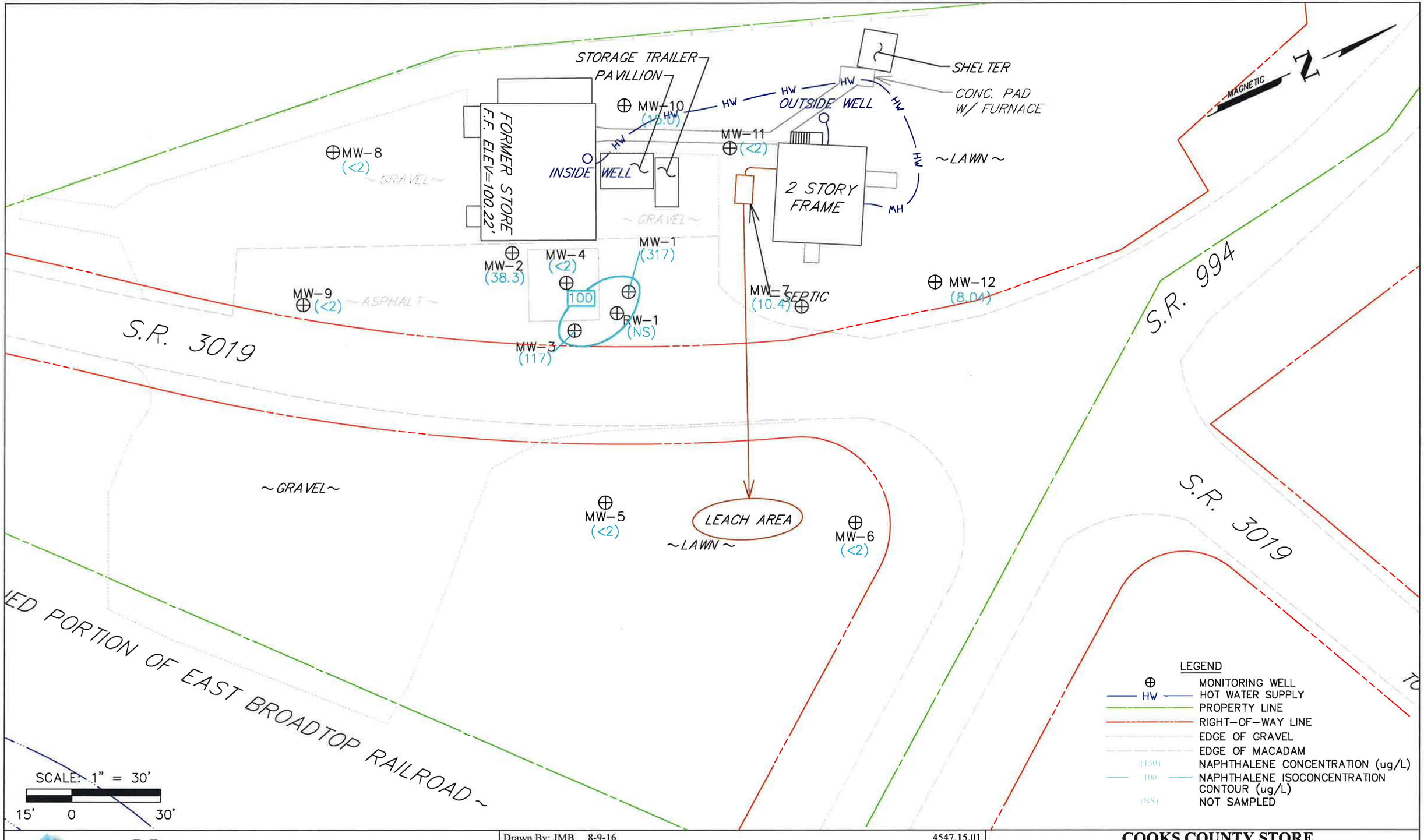
COOK'S COUNTY STORE
21042 Cooks Road
Robertsdale, PA

ETHYLBENZENE ISOCONCENTRATION MAP

May 10, 2016



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COOKS COUNTY STORE
21042 Cooks Road
Robertsdale, PA

NAPHTHALENE ISOCONCENTRATION MAP

May 10, 2016

APPENDIX I

CONTAMINANT MASS CALCULATION

Cooks Country Store
Robertsdale, Pennsylvania
4547.15.01
Overburden Dissolved Contaminant Mass in Aquifer

Aquifer Properties*	
Porosity (n) =	0.33
Specific Gravity (G) =	2.56
Fraction of organic carbon (f_{oc})=	0.02

Compound Properties		
Compound	**K_{oc}**	**Mass conversion factor[1]**
Benzene	58	3.2996
Toluene	130	6.986
Ethylbenzene	220	11.594
Xylenes	350	18.25
MTBE	12	0.9444
Cumene	2,800	143.69
Naphthalene	950	48.97
1,2,4-Trimethylbenzene	2,200	112.97
1,3,5-Trimethylbenzene	660	34.122

Well	Planar Coordinates		Well Sample Concentrations[2]				Aquifer Thickness[3] (ft)	Actual Aquifer Concentration[4]				Mass per unit area[5]			
	x (ft)	y (ft)	MTBE µg/L	BTEX + Cumene µg/L	Naphthalene µg/L	Trimethylbenzene µg/L		MTBE µg/L	BTEX + Cumene µg/L	Naphthalene µg/L	Trimethylbenzene µg/L	MTBE g/ft2	BTEX + Cumene g/ft2	Naphthalene g/ft2	Trimethylbenzene g/ft2
MW-1	75	86.25	18.2	10346.7	317	1474	10	17.18808	132089.227	15523.49	136240.148	0.004869144	37.4190445	4.397589235	38.59494278
MW-2	33.75	90	0	2312.8	38.3	298.1	10	0	28015.448	1875.551	28385.6562	0	7.93638754	0.531317564	8.04126238
MW-3	60	69.375	0	2689	117	615	10	0	36879.6388	5729.49	59068.614	0	10.4474897	1.623084986	16.73331841
MW-4	52.5	84.375	0	13.81	0	4.66	10	0	186.07154	0	526.4402	0	0.05271148	0	0.149133201
MW-5	82.5	15	0	46.93	0	9.54	8.78	0	552.15506	0	1077.7338	0	0.13733488	0	0.268059568
MW-6	166.875	26.25	0	4.96	0	0	9	0	16.366016	0	0	0	0.00417264	0	0
MW-7	133.125	93.75	7.41	602.6	10.4	6.69	9	6.998004	7095.242	509.288	755.7693	0.001784194	1.80898521	0.129846799	0.192689057
MW-10	60	148.125	0	112.95	15	146.1	11	0	2293.45782	734.55	12743.8674	0	0.71467524	0.228896601	3.97117681
MW-11	97.5	144.375	0	0	0	0	2.31	0	0	0	0	0	0	0	0
MW-12	174.375	114.375	0	46.68	8.04	87.8	2.85	0	1218.61464	393.7188	8286.6124	0	0.09838673	0.031787495	0.669032446
CP-1	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
CP-2	165	0	0	0	0	0	5	0	0	0	0	0	0	0	0
CP-3	165	191.25	0	0	0	0	5	0	0	0	0	0	0	0	0
CP-4	0	191.25	0	0	0	0	5	0	0	0	0	0	0	0	0

* Values for porosity, specific gravity and fraction of organic carbon are taken from geotechnical lab results from soil samples collected 8/18/15

1. Effects of porosity and adsorption as determined by $(n+(k_{oc}*f_{oc}*G))$
2. Groundwater contaminant concentrations taken from the 5/10/16 sampling event
3. Water column thickness per well taken from static water level measurements collected 5/10/16
4. Concentration of groundwater contamination after the effects of porosity and adsorption are accounted; using formula $C_{aquifer} = C_{well} *(n+(k_{oc}*f_{oc}*G))$
5. Mass per unit area as determined through aquifer concentration data multiplied by the aquifer thickness

CP-1 through CP-4 - Corner Point coordinates (generic) for established area of concern

Overburden Contaminant Mass Computations – BTEX plus Cumene

Cooks Country Store- Robertsdale, PA

Based on analytical results from the May 10, 2016 sampling event

UPPER SURFACE

Grid File:	**H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\Mass Calculation\BTEXcumene.grd**
Grid size as read:	**91 cols by 100 rows**
Delta X:	**1.9375**
Delta Y:	**1.93181818182**
X-Range:	**0 to 174.375**
Y-Range:	**0 to 191.25**
Z-Range:	**0 to 36.8136819004**

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by	
Trapezoidal Rule:	**125190.173803 grams**
Simpson's Rule:	**125207.421941 grams**
Simpson's 3/8 Rule:	**125202.516444 grams**

CUT & FILL VOLUMES

Positive Volume [Cut]:	**125190.173803**
Negative Volume [Fill]:	**0**
Cut minus Fill:	**125190.173803**

AREAS

Positive Planar Area (Upper above Lower):	**32256.2926136**
Negative Planar Area (Lower above Upper):	**0**
Blanked Planar Area:	**1092.92613636**
Total Planar Area:	**33349.21875**
Positive Surface Area (Upper above Lower):	**34791.4967178**
Negative Surface Area (Lower above Upper):	**0**

Overburden Contaminant Mass Computations – MTBE

Cooks Country Store- Robertsdale, PA

Based on analytical results from the May 10, 2015 sampling event

UPPER SURFACE

Grid File:	**H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\Mass Calculation\MTBE.grd**
Grid size as read:	**91 cols by 100 rows**
Delta X:	**1.9375**
Delta Y:	**1.93181818182**
X-Range:	**0 to 174.375**
Y-Range:	**0 to 191.25**
Z-Range:	**0 to 0.00479874578653**

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by	
Trapezoidal Rule:	**16.1405195126 grams**
Simpson's Rule:	**16.1400791632 grams**
Simpson's 3/8 Rule:	**16.1402018771 grams**

CUT & FILL VOLUMES

Positive Volume [Cut]:	**16.1405195126**
Negative Volume [Fill]:	**0**
Cut minus Fill:	**16.1405195126**

AREAS

Positive Planar Area (Upper above Lower):	**32256.2926136**
Negative Planar Area (Lower above Upper):	**0**
Blanked Planar Area:	**1092.92613636**
Total Planar Area:	**33349.21875**
Positive Surface Area (Upper above Lower):	**32256.2926712**
Negative Surface Area (Lower above Upper):	**0**

Overburden Contaminant Mass Computations – Trimethlybenzen

Cooks Country Store-Robertsdale, PA

Based on analytical results from the May 10, 2016 sampling event

UPPER SURFACE

Grid File:	H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\Mass Calculation\TMB.grd
Grid size as read:	91 cols by 100 rows
Delta X:	1.9375
Delta Y:	1.93181818182
X-Range:	0 to 174.375
Y-Range:	0 to 191.25
Z-Range:	-4.4408920985E-016 to 37.9615103321

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by	
Trapezoidal Rule:	144501.004823 grams
Simpson's Rule:	144529.630732 grams
Simpson's 3/8 Rule:	144521.911898 grams

CUT & FILL VOLUMES

Positive Volume [Cut]:	144501.004823
Negative Volume [Fill]:	2.77030082376E-016
Cut minus Fill:	144501.004823

AREAS

Positive Planar Area (Upper above Lower):	32256.2926136
Negative Planar Area (Lower above Upper):	1.44825426178E-012
Blanked Planar Area:	1092.92613636
Total Planar Area:	33349.21875
Positive Surface Area (Upper above Lower):	34986.2225044
Negative Surface Area (Lower above Upper):	1.45147338537E-012

Overburden Contaminant Mass Computations – Naphthalene

Cooks Country Store-Robertsdale, PA

Based on analytical results from the May 10, 2016 sampling event

UPPER SURFACE

Grid File:	H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\Mass Calculation\Naph.grd
Grid size as read:	91 cols by 100 rows
Delta X:	1.9375
Delta Y:	1.93181818182
X-Range:	0 to 174.375
Y-Range:	0 to 191.25
Z-Range:	0 to 4.32599794751

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by	
Trapezoidal Rule:	14463.3753628 grams
Simpson's Rule:	14465.0694668 grams
Simpson's 3/8 Rule:	14464.4155051 grams

CUT & FILL VOLUMES

Positive Volume [Cut]:	14463.3753628
Negative Volume [Fill]:	0
Cut minus Fill:	14463.3753628

AREAS

Positive Planar Area (Upper above Lower):	32256.2926136
Negative Planar Area (Lower above Upper):	0
Blanked Planar Area:	1092.92613636
Total Planar Area:	33349.21875
Positive Surface Area (Upper above Lower):	32298.4646913
Negative Surface Area (Lower above Upper):	0

APPENDIX J

FEASIBILITY TESTING
TEMPORARY DISCHARGE PERMIT

Cooks Country Sto
4547.15.01

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MAY 25 2016

MAY 31 2016

Betty Hess
Cooks Country Store
16570 Hess Lane
James Creek, PA 16657

Re: Temporary Discharge Request
Cooks Country Store
Todd Township, Huntingdon County

Dear Ms. Hess:

This is in response to the May 16, 2016 letter requesting approval for a temporary discharge of treated groundwater at Cooks Country Store located at 21042 Cooks Road, Robertsdale, PA 16674. A 12-hour pump test of unleaded gasoline contaminated groundwater will be performed. The estimated discharge rate during this period is estimated to be approximately ten to fifteen gallons per minute.

Extracted groundwater will be treated with two lead and lag granular activated carbon units prior to discharge to Yellow Branch (TSF).

We approve your request to discharge, subject to the following conditions:

1. Permission to discharge to sanitary sewers adjacent to the site has been denied by the sanitary sewer system owner.

2. Effluent Limitations:

Discharge Parameter	Average Values (µg/l)	Instantaneous Maximum*
Benzene	1.0	2.5
Total BETX**	100	250
Ethylbenzene	Monitor only	
Toluene	Monitor only	
Total Xylenes	Monitor only	
MTBE	Monitor only	
pH	Within limits of 6.0 - 9.0 standard units at all times	

* The analytical results of any single grab sample must comply with this limitation.
** Total BETX shall be measured as the sum of Benzene, Ethylbenzene, Toluene, and Xylene.

3. Influent and effluent samples shall be collected and analyzed. At least two representative samples shall be taken after startup, not less than 48 hours apart. Benzene shall be measured by an EPA approved method with a sensitivity of 0.001 mg/l or lower. Ethylbenzene, Toluene, and Total Xylenes shall be measured by an approved EPA method.

4. All monitoring results and a copy of this letter must accompany any future NPDES or Water Quality Management permit applications for this site.

5. This discharge shall not induce erosion of the ground surface, banks, or streambed; appropriate erosion and sedimentation controls shall be installed.

6. Notify the Environmental Cleanup and Brownfields Program 24 hours prior to the discharge at 717-705-4705.

7. Monitoring results must be submitted within 28 days after completion of the test to:

   DEP - Environmental Cleanup and Brownfields Program
   Southcentral Regional Office
   909 Elmerton Avenue
   Harrisburg, PA 17110-8200

8. If the temporary discharge authorized by this approval does not comply with all conditions outlined herein, the discharge constitutes an unpermitted discharge and is subject to all penalty provisions under The Clean Streams Law.

9. This temporary discharge approval shall expire 180 days from the date of this letter.

If you have any questions, please call Brenda Fruchtl, P.G. of the Permits Section at 717.705.4812.

Sincerely,

Maria D. Bebenek, P.E.
Program Manager
Clean Water Program

cc: Michael Crowe, P.G., Mountain Research, LLC, 825 25th Street, Altoona, PA 16601
Operations
File

APPENDIX K

FEASIBILITY TEST RESULTS

Groundwater & Environmental Services, Inc.

WESTERN PENNSYLVANIA OFFICE

July 19, 2016

Mr. Michael Crowe, P.G.
Project Manager
Mountain Research, LLC
825 25th Street
Altoona, PA 16601

RE: Feasibility Study Summary
Cook's Country Store
21042 Cooks Road
Robertsdale, PA 16674

Dear Mr. Crowe:

Groundwater & Environmental Services, Inc. (GES) conducted a two-day feasibility study at the former Cook's Country Store (Cook's) located at 21042 Cooks Road, Robertsdale, Pennsylvania (**Figure 1**, Site Map). The study was conducted via GES' Data Acquisition and Processing Laboratory (DAPL) on June 28 and 29, 2016. This correspondence summarizes the activities performed by GES during the feasibility study.

Methodologies

The feasibility study was performed at on extraction well using GES' DAPL unit. The study included groundwater extraction only utilizing an electric submersible pump and a QED AP-4 pneumatic pump. Following the groundwater extraction only portion of the study at recovery well RW-1 a vacuum enhanced groundwater extraction (VEGE) study was completed at recovery well RW-1.

Vacuum response was recorded using vacuum transducers installed in the observation wells and extraction well. Magnahelic gauges calibrated in inches of water column (in. w.c.) were also connected to the observation wells to measure vacuum influence to serve as a manual check to ensure accurate data collection. Water level fluctuations were recorded using 15 pound per square inch (psi) pressure transducers installed in the observation wells and the extraction well. In addition, manual water level readings were obtained using an electronic oil/water interface probe. Airflow readings were monitored using flow meters on the DAPL unit. Influent volatile organic compound (VOC) concentrations were monitored with a calibrated photoionization detector (PID). Groundwater extraction flow rates were determined using a totalizing flow meter. Recovered groundwater was treated through two 200-pound liquid phase granular activated carbon (LGAC) vessels and discharged to Yellow Branch Creek in accordance with a temporary discharged permit secured by Mountain Research, LLC. Recovered soil vapors were treated through two 150-pound vapor phase GAC (VGAC) vessels prior to being discharged to the atmosphere.

The study included recovery of groundwater and soil vapor from recovery well RW-1. The following table provides a brief summary of feasibility study methodologies and observed influences:

Remedial Technology	Stage/ Step	Groundwater Extraction Rate (gpm)	Hydraulic ROI (feet)	Applied Vacuum (in. w.c.)	Pneumatic ROI (feet)	Air Flow Rate (scfm)	Influent VOC (ppmv)
Groundwater Extraction at RW-1	1	0.59	6	NA	NA	NA	NA
VEGE at RW-1	2/1	0.23	27	38.34	<6	2.75	387.05
	2/2	0.14	36	61.52	<6	7.75	122.17
	2/3	1.81	70	117.19	26	22.33	831.68

gpm - gallons per minute
ROI - radius of influence
in w.c.- inches of water column
scfm - standard cubic feet per minute
VOC - volatile organic compound
PID - photoionization detector
ppmv - parts per million by volume

Remedial feasibility study data collected by the DAPL vehicle are provided in **Attachment 1** (Remedial Feasibility Study Data). Remedial feasibility study calculations are provided in **Attachment 2** (Engineering Calculations).

Stage 1 - Groundwater Extraction at RW-1

Prior to the groundwater extraction study at recovery well RW-1 on June 28, 2016, static groundwater elevations were gauged in surrounding monitoring wells. Once depths to groundwater was obtained, a Grundfos RediFlo-4 electric submersible pump was placed in recovery well RW-1 with the intake of the pump approximately 6.5 feet below the static water level. Hydraulic influences were recorded using the DAPL computer, which was connected to pressure transducers in monitoring wells MW-1, MW-2, MW-4, and MW-7, which are 6.83, 42, 20 and 63 feet, respectively, from recovery well RW-1. Hydraulic influences were manually measured in monitoring wells MW-3, MW-5 and MW-6, which are 17, 66 and 209 feet, respectively, from recovery well RW-1.

For the initial 39 minutes of Stage 1 with the electric submersible pump, the groundwater extraction flow rate averaged 4.63 gallons per minute (gpm); however, following 39 minutes of groundwater extraction, the groundwater recharge rate was not sufficient to maintain groundwater extraction with the electric pump (i.e., no groundwater recovery). Therefore, a pneumatic pump (QED AP-4) was installed in recovery well RW-1 for the remainder of Stage 1 and the groundwater extraction flow rate average 0.06 gpm. Collected hydraulic data was analyzed through linear regression to determine a pumping radius of influence (ROI). A response of 0.10 feet of groundwater drawdown was used as a baseline. Observations of less than 0.10 feet were deemed natural fluctuations. Hydraulic observations greater than 0.10 feet were observed in monitoring well MW-3 during Stage 1; therefore, the ROI is estimated to be 6 feet. Linear regression calculations are presented in **Attachment 2**.

Following 279 minutes of groundwater extraction only, Stage 1 of the feasibility study was complete for June 28, 2016.

Stage 2, Vacuum Enhanced Groundwater Extraction at RW-1

Prior to the vacuum enhanced groundwater extraction (VEGE) study at recovery well RW-1 on June 29, 2016, static groundwater elevations were gauged in surrounding monitoring wells. The pneumatic pump utilized in Stage 1 was installed in recovery well RW-1, with the inlet of the pump at approximately 7.5 feet below ground surface (bgs). Blower vacuums of 46, 69 and 126 in. w.c. were applied to recovery well RW-1. Soil vapors were extracted from recovery well RW-1 utilizing a Rotron EN505 regenerative blower, a Rotron EN707 regenerative blower and a Rietschle VLR-300 rotary vane vacuum pump. Groundwater was continuously extracted from recovery well RW-1 using the QED AP-4 pneumatic pump.

Stage 2, Step 1 - 38 in. w.c.
Groundwater was extracted at a rate of 0.23 gpm throughout the duration of the first VEGE step. An average applied vacuum of 46.5 in. w.c. (at the blower), using the Rotron EN505 blower, was applied to recovery well RW-1. The resultant well vacuum averaged 38.34 in. w.c. Soil vapors were recovered at an average vapor flow rate of 2.75 standard cubic feet per minute (scfm) and influent VOC concentrations averaged 387.05 parts per million (ppm).

Hydraulic influence data was analyzed through linear regression to estimate a pumping ROI. A response of 0.10 feet of groundwater drawdown was used as a baseline. Observations of less than 0.10 feet were deemed natural fluctuations. Notable hydraulic influence was observed in monitoring wells MW-1 and MW-4 during Stage 2, Step 1, and the hydraulic ROI was estimated to be 27 feet. Notable pneumatic influence was not observed in any observation wells during Stage 2, Step1. A response of 0.10 in. w.c. of vacuum response was used as a baseline. Observations of less than 0.10 in. w.c. were deemed natural fluctuations. A pneumatic ROI of less than 6 feet was estimated, which is the distance from recovery well RW-1 to the nearest monitoring well. Linear regression calculations are presented in **Attachment 2**. Groundwater drawdown and vacuum response data from Stage 2, Step 1 are provided in the following table:

Observation Well	Distance from Extraction Well *(feet)*	Hydraulic Response in Observation Well *(feet)*	Pneumatic Response In Observation Well *(in. w.c.)*
MW-1	6.83	1.41	0.00
MW-3	17	0.23	0.00
MW-4	20	0.05	0.00
MW-2	42	0.11	0.02
MW-7	63	0.03	0.02
MW-5	66	0.00	0.00
MW-6	209	0.00	0.00

in. w.c. - inches of water column

Stage 2, Step 2 - 69 in. w.c.
The second VEGE step at recovery well RW-1 consisted of applying an average well vacuum of 69 in. w.c. using the Rotron EN707 blower. The resultant applied well vacuum averaged 61.52 in. w.c. Soil vapors were recovered at an average rate of 7.75 scfm and an influent VOC concentration of 122.17 ppm. Groundwater was extracted at a rate of 0.14 gpm throughout the duration of Stage 2, Step 2.

Hydraulic influences increased during Stage 2, Step 2, and were observed in monitoring wells MW-1, MW-2, MW-3 and MW-4. A hydraulic ROI of 36 feet was estimated for this step. Notable pneumatic influence was not observed in any observation wells during Stage 2, Step 2. A pneumatic ROI of less than 6 feet was estimated. Linear regression calculations are presented in **Attachment 2**. Groundwater drawdown and vacuum response data from Stage 2, Step 2 are provided in the following table:

Observation Well	Distance from Extraction Well *(feet)*	Hydraulic Response in Observation Well *(feet)*	Pneumatic Response In Observation Well *(in. w.c.)*
MW-1	6.83	0.41	0.00
MW-3	17	0.12	0.00
MW-4	20	0.17	0.00
MW-2	42	0.04	0.01
MW-7	63	0.05	0.00
MW-5	66	0.00	0.00
MW-6	209	0.00	0.00

in. w.c. - inches of water column

Stage 2, Step 3 - 126 in. w.c.
The third VEGE step at recovery well RW-1 consisted of applying an average well vacuum of 126 in. w.c. using the Rietschle VLR-300 rotary vane vacuum pump. The resultant applied well vacuum averaged 117.19 in. w.c. Soil vapors were recovered at an average rate of 22.33 scfm and an influent VOC concentration of 831.68 ppm. Groundwater was extracted at a rate of 1.81 gpm throughout the duration of Stage 2, Step 3.

Hydraulic influences increased during Stage 2, Step 3. Hydraulic influences were observed in monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-7. A hydraulic ROI of 70 feet was estimated for this step. Notable pneumatic influence was observed in monitoring well MW-3 during Stage 2, Step 3. As a result, a pneumatic ROI of 26 feet was estimated. Linear regression calculations are presented in **Attachment 2.** Groundwater drawdown and vacuum response data from Step 3 are provided in the following table:

Observation Well	Distance from Extraction Well *(feet)*	Hydraulic Response in Observation Well *(feet)*	Pneumatic Response In Observation Well *(in. w.c.)*
MW-1	6.83	1.52	0.02
MW-3	17	1.42	2.10
MW-4	20	0.61	0.04
MW-2	42	0.18	0.04
MW-7	63	0.19	0.00
MW-5	66	0.01	0.00
MW-6	209	0.00	0.00

in. w.c. - inches of water column

Summary and Conclusions
GES conducted a 2-day feasibility study to evaluate potential remedial technologies for the recovery of groundwater and soil vapor at Cook's Country Store, located at 21042 Cooks Road, Robertsdale, Pennsylvania. The feasibility study included groundwater extraction only and VEGE studies at recovery well RW-1. Data collected during the study were utilized to estimate hydraulic and pneumatic radii-of-influence.

Results of the feasibility study indicate groundwater and soil vapor recovery is limited at low- and mid-vacuum conditions; however, under an applied high-vacuum (i.e., greater than 100 in w.c.) conditions groundwater and soil vapor recovery results appear to be favorable for increased recovery of dissolved and adsorbed phase hydrocarbon impacts.

If after review of the information, there any questions please do not hesitate to contact GES at (800) 267-2549. GES appreciates the opportunity to provide Mountain Research, LLC with environmental services.

Sincerely,

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

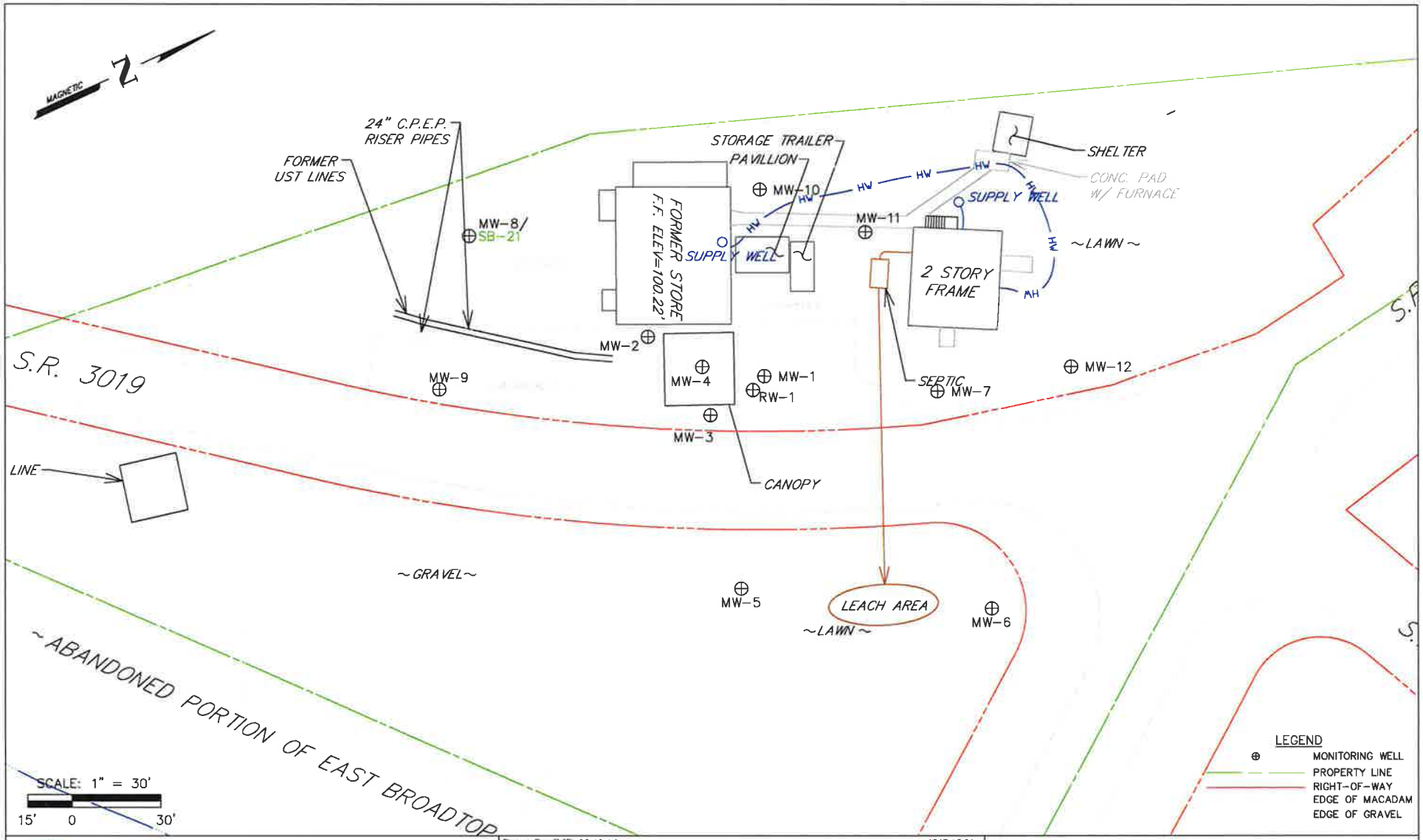
Joseph E. Hinkle, E.I.T.
Remediation Specialist

Scott L. Merritt, P.E.
Sr. Engineering Manager

Attachments/Enclosures

cc: File

FIGURE



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Drawn By: JMB 05-10-16
Submitted By:
Project Manager: M.C.
Checked By:

4547.15.01

H:\C\Cooks Country Store\4547.15.01 Robertsdale, PA\AUTO CAD\1 NEW BASE MAP(05-10-16).dwg

COOK'S COUNTY STORE
21042 Cooks Road
Robertsdale, PA

SITE MAP
Figure 1

ATTACHMENT 1

ESTIMATED RADIUS-OF-INFLUENCE
Cook's Country Store
21042 Cooks Road
Roberstdale, Pennsylvania

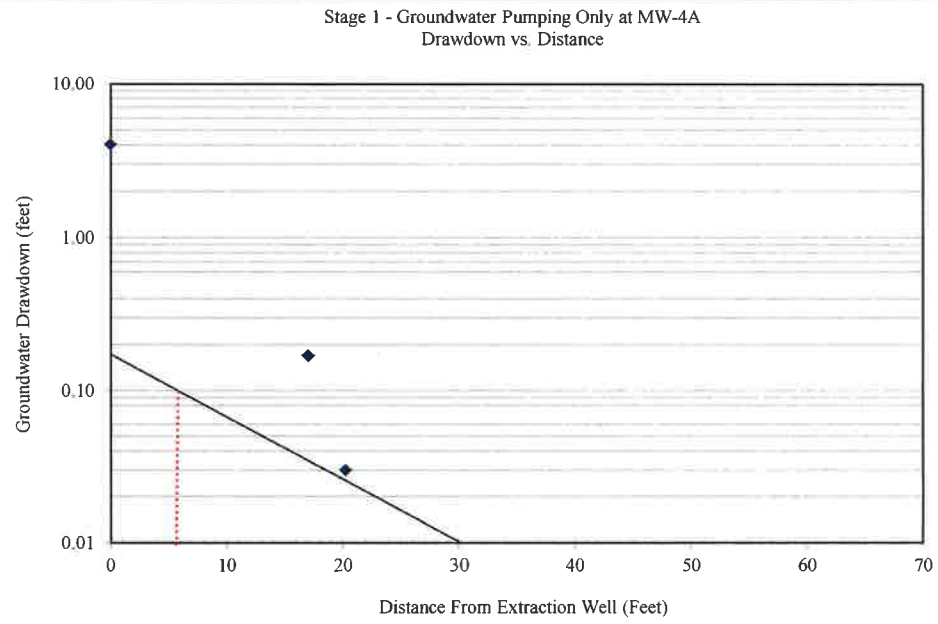
June 28, 2016

HYDRAULIC RADIUS OF INFLUENCE

Extraction Well	**RW-1**
T Start:	10:31
T Finish:	14:12
T Data:	14:12

	Distance from RW-1 *(Feet)*	Change in Water Elevation *(Feet)*
RW-1	0	4.05
MW-1	7	0.00
MW-3	17	0.17
MW-4	20	0.03
MW-2	42	0.00
MW-7	63.00	0.00
MW-5	66.00	0.01
MW-6	209.00	0.03

Test Type:	Pump Test at RW-1
Applied Well Vac:	0.00 in w.c.
Gallons Pumped:	165.00 total gallons
Test Length:	279.00 mins
Pumping Rate:	0.59 gpm
PID Average:	NA ppmV
Flow Rate Average:	NA scfm
Radius of Influence:	6 feet



ESTIMATED RADIUS-OF-INFLUENCE
Cook's Country Store
21042 Cooks Road
Roberstdale, Pennsylvania

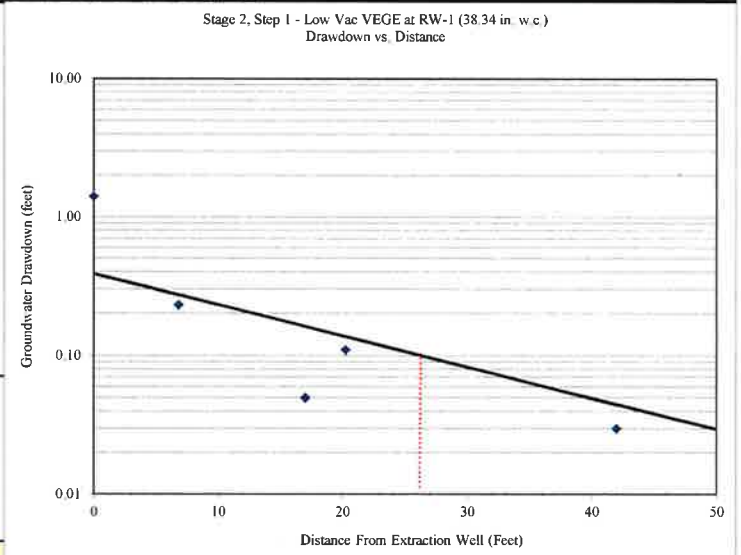
June 29, 2016

HYDRAULIC RADIUS OF INFLUENCE

Extraction Well	**RW-1**
T Start:	9:07
T Finish:	10:10
T Data:	10:10

	Distance from RW-1 *(Feet)*	Change in Water Elevation *(Feet)*
RW-1	0.00	1.41
MW-1	6.83	0.23
MW-3	17.00	0.05
MW-4	20.25	0.11
MW-2	42.00	0.03
MW-7	63.00	0.03
MW-5	66.00	0.00
MW-6	209.00	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rotron EN505Regenerative Blower
Applied Well Vac:	38.34 in w.c.
Gallons Pumped:	14 total gallons
Test Length:	62 mins
Pumping Rate:	0.23 gpm
PID Average:	387.05 ppmV
Flow Rate Average:	2.75 scfm
Radius of Influence:	27 feet

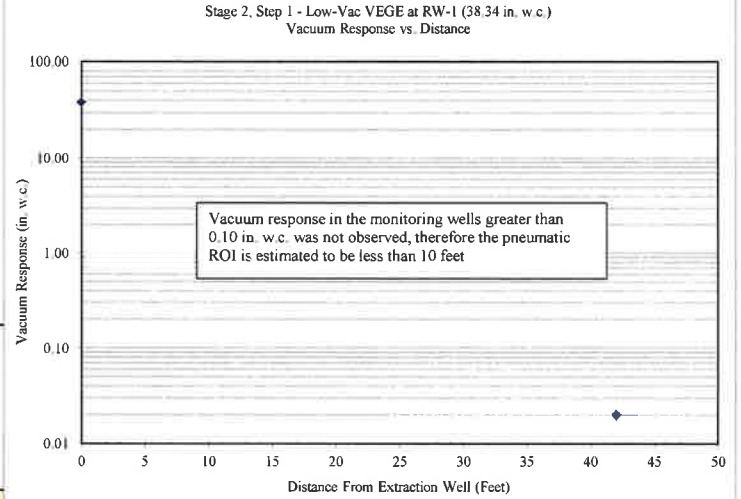


PNEUMATIC RADIUS OF INFLUENCE

Extraction Well:	**RW-1**
T Start:	10:47
T Finish	11:40
T Data	10:10

	Distance from RW-1 *(Feet)*	Vacuum Response (in w.c.)
RW-1	0.00	38.34
MW-1	6.83	0.00
MW-3	17.00	0.00
MW-4	20.25	0.00
MW-2	42.00	0.02
MW-7	63.00	0.02
MW-5	66.00	0.00
MW-6	209.00	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rotron EN505 Regenerative Blower
Applied Well Vac:	38.34 in w.c.
Gallons Pumped:	14.00 total gallons
Test Length:	62.00 mins
Pumping Rate:	0.23 gpm
PID Average:	387.05 ppmV
Flow Rate Average:	2.75 scfm
Radius of Influence:	<6 feet



ESTIMATED RADIUS-OF-INFLUENCE
Cook's Country Store
21042 Cooks Road
Roberstdale, Pennsylvania

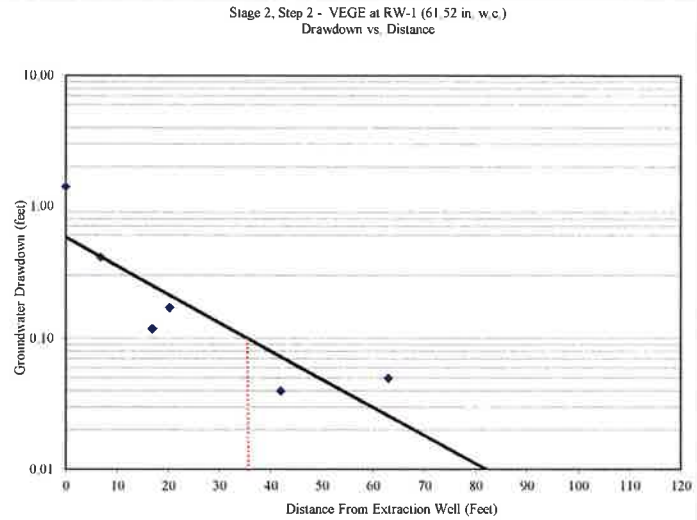
June 29, 2016

HYDRAULIC RADIUS OF INFLUENCE

Extraction Well:	**RW-1**
T Start:	10:10
T Finish:	11:19
T Data:	11:19

	Distance from RW-1 *(Feet)*	Change in Water Elevation *(Feet)*
RW-1	0.00	1.41
MW-1	6.83	0.41
MW-3	17.00	0.12
MW-4	20.25	0.17
MW-2	42.00	0.04
MW-7	63.00	0.05
MW-5	66.00	0.00
MW-6	209.00	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rotron EN707Regenerative Blower
Applied Well Vac	61.52 in w.c.
Gallons Pumped:	10.00 total gallons
Test Length:	69.00 mins
Pumping Rate:	0.14 gpm
PID Average:	122.17 ppmV
Flow Rate Average:	7.75 scfm
Radius of Influence:	36 feet

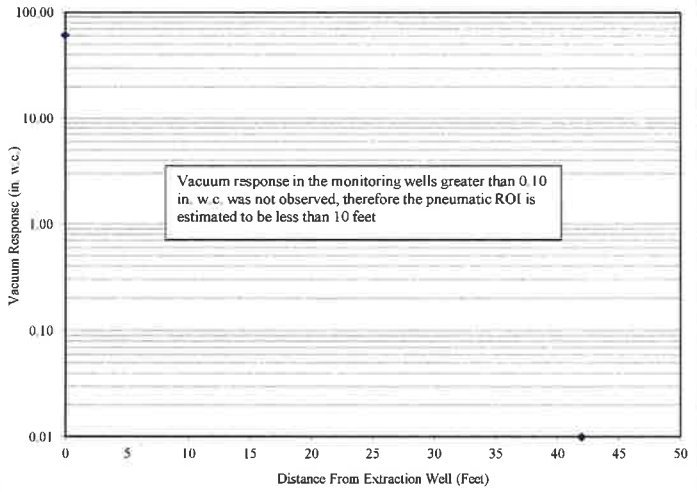


PNEUMATIC RADIUS OF INFLUENCE

Extraction Well:	**RW-1**
T Start:	10:10
T Finish:	11:19
T Data:	11:19

	Distance from RW-1 *(Feet)*	Vacuum Response (in w.c.)
RW-1	0.00	61.58
MW-1	6.83	0.00
MW-3	17.00	0.00
MW-4	20.25	0.00
MW-2	42.00	0.01
MW-7	63.00	0.00
MW-5	66.00	0.00
MW-6	209.00	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rotron EN707Regenerative Blower
Applied Well Vac:	61.52 in w.c.
Gallons Pumped:	10.00 total gallons
Test Length:	69.00 mins
Pumping Rate:	0.14 gpm
PID Average:	122.17 ppmV
Flow Rate Average:	7.75 scfm
Radius of Influence:	< feet



ESTIMATED RADIUS-OF-INFLUENCE
Cook's Country Store
21042 Cooks Road
Roberstdale, Pennsylvania

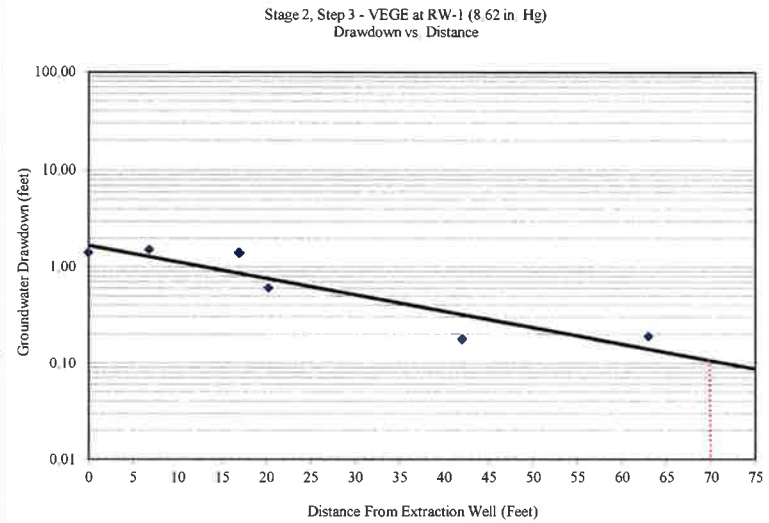
June 29, 2016

HYDRAULIC RADIUS OF INFLUENCE

Extraction Well	**RW-1**
T Start:	11:45
T Finish:	14:22
T Data:	14:22

	Distance from RW-1 *(Feet)*	Change in Water Elevation *(Feet)*
RW-1	0	1.41
MW-1	6.83	1.52
MW-3	17	1.42
MW-4	20.25	0.61
MW-2	42	0.18
MW-7	63	0.19
MW-5	66	0.01
MW-6	209	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rietschle VLR-300 Rotary Vane Vacuum Pump
Applied Well Vac:	8.62 in Hg
Gallons Pumped:	331.00 total gallons
Test Length:	183.00 mins
Pumping Rate:	1.81 gpm
PID Average:	831.68 ppmV
Flow Rate Average:	22.33 scfm
Radius of Influence:	70 feet

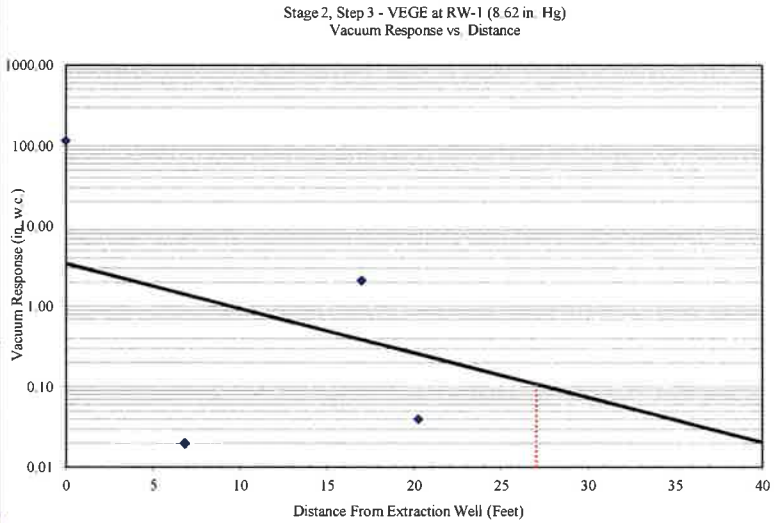


PNEUMATIC RADIUS OF INFLUENCE

Extraction Well:	**RW-1**
T Start:	11:45
T Finish	14:22
T Data	14:22

	Distance from RW-1 *(Feet)*	Vacuum Response (in w.c.)
RW-1	0.00	117.19
MW-1	6.83	0.02
MW-3	17.00	2.10
MW-4	20.25	0.04
MW-2	42.00	0.04
MW-7	63.00	0.00
MW-5	66.00	0.00
MW-6	209.00	0.00

Test Type:	VEGE at RW-1
Blower Type:	Rietschle VLR-300 Rotary Vane Vacuum Pump
Applied Well Vac:	8.62 in Hg
Gallons Pumped:	331.00 total gallons
Test Length:	183.00 mins
Pumping Rate:	1.81 gpm
PID Average:	831.68 ppmV
Flow Rate Average:	22.33 scfm
Radius of Influence:	26 feet



ATTACHMENT 2

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well) RW-1 L.L. Change - = ↓ + = ↑	RADIO 3 MW-1 L.L. Change - = ↓ + = ↑	COMMENTS
0:00:00	10:22:44	0.00	0.00	
0:00:30	10:23:14	-0.01	-0.02	
0:01:00	10:23:44	-0.01	-0.02	
0:01:30	10:24:14	-0.02	-0.02	
0:02:00	10:24:44	-0.15	-0.02	
0:02:30	10:25:14	-0.04	-0.02	
0:03:00	10:25:44	-0.46	-0.02	
0:03:30	10:26:14	-0.27	-0.02	
0:04:00	10:26:44	-0.09	-0.02	
0:04:30	10:27:14	-0.05	-0.03	
0:05:00	10:27:44	-0.04	-0.04	
0:05:30	10:28:14	-0.03	-0.03	
0:06:00	10:28:44	-0.04	-0.04	
0:06:30	10:29:14	-0.03	-0.03	
0:07:00	10:29:44	-0.03	-0.04	
0:07:30	10:30:14	-0.15	-0.05	
0:08:00	10:30:44	-0.38	-0.05	
0:08:30	10:31:14	-0.35	-0.05	Begin pumping down RW-1
0:09:00	10:31:44	-0.38	-0.05	
0:09:30	10:32:14	-0.48	-0.05	
0:10:00	10:32:44	-0.46	-0.05	
0:10:30	10:33:14	-0.33	-0.05	
0:11:00	10:33:44	-0.45	-0.06	
0:11:30	10:34:14	-0.47	-0.06	
0:12:00	10:34:44	-0.49	-0.06	
0:12:30	10:35:14	-0.51	-0.05	
0:13:00	10:35:44	-0.54	-0.06	
0:38:38	11:01:21	-0.55	-0.06	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well) RW-1 L.L. Change - = ↓ + = ↑	RADIO 3 MW-1 L.L. Change - = ↓ + = ↑	COMMENTS
0:38:38	11:01:22	-0.58	-0.06	
0:38:39	11:01:22	-0.63	-0.06	
0:38:39	11:01:23	-0.68	-0.06	
0:38:40	11:01:24	-0.73	-0.05	
0:38:41	11:01:24	-0.76	-0.06	
0:38:41	11:01:25	-0.79	-0.06	
0:38:42	11:01:25	-0.87	-0.07	
0:38:42	11:01:26	-1.02	-0.07	
0:38:43	11:01:26	-1.15	-0.07	
0:38:43	11:01:27	-1.30	-0.07	
0:38:44	11:01:27	-1.55	-0.08	
0:38:44	11:01:28	-1.90	-0.08	
0:38:45	11:01:28	-4.75	-0.07	
0:38:45	11:01:29	-3.62	-0.08	
0:38:46	11:01:29	-3.31	-0.11	
0:38:46	11:01:30	-4.62	-0.13	
0:38:47	11:01:30	-3.58	-0.11	
0:38:47	11:01:31	-4.41	-0.10	
0:38:48	11:01:31	-4.37	-0.10	
0:39:00	11:01:44	-4.37	-0.10	
0:39:30	11:02:14	-4.40	-0.10	
0:40:00	11:02:44	-4.47	-0.11	
0:40:30	11:03:14	-4.54	-0.11	
0:41:00	11:03:44	-4.64	-0.11	
0:41:30	11:04:14	-4.81	-0.11	
0:42:00	11:04:44	-5.08	-0.11	
0:42:30	11:05:14	-5.08	-0.12	
0:43:00	11:05:44	-5.08	-0.11	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-1	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:43:30	11:06:14	-5.08	-0.11	
0:44:00	11:06:44	-5.08	-0.13	
0:44:30	11:07:14	-5.08	-0.13	
0:45:00	11:07:44	-5.08	-0.13	
0:45:30	11:08:14	-5.08	-0.13	
0:46:00	11:08:44	-5.08	-0.13	
0:46:30	11:09:14	-5.08	-0.13	
0:47:00	11:09:44	-5.08	-0.13	
0:47:30	11:10:14	-5.08	-0.13	
0:48:00	11:10:44	-5.08	-0.13	
0:48:30	11:11:14	-5.08	-0.13	
0:49:00	11:11:44	-5.00	-0.13	
0:49:30	11:12:14	-4.95	-0.13	
0:50:00	11:12:44	-4.85	-0.13	
0:50:30	11:13:14	-4.77	-0.13	
0:51:00	11:13:44	-4.72	-0.13	
0:51:30	11:14:14	-4.62	-0.13	
0:52:00	11:14:44	-4.52	-0.13	
0:52:30	11:15:14	-4.45	-0.13	
0:53:00	11:15:44	-4.35	-0.14	
0:53:30	11:16:14	-4.26	-0.13	
0:54:01	11:16:45	-4.20	-0.13	
0:54:30	11:17:14	-4.14	-0.15	
0:55:00	11:17:44	-4.07	-0.15	
0:55:30	11:18:14	-4.03	-0.16	
0:56:00	11:18:44	-3.96	-0.16	
0:56:30	11:19:14	-3.87	-0.15	
0:57:00	11:19:44	-3.81	-0.15	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well) RW-1 L.L. Change - = ↓ + = ↑	RADIO 3 MW-1 L.L. Change - = ↓ + = ↑	COMMENTS
0:57:30	11:20:14	-3.72	-0.14	
0:58:00	11:20:44	-4.46	-0.13	
0:58:30	11:21:14	-4.40	-0.13	
0:59:00	11:21:44	-4.34	-0.15	
0:59:30	11:22:14	-4.29	-0.15	
1:00:00	11:22:44	-4.26	-0.15	
1:00:30	11:23:14	-4.19	-0.13	
1:01:00	11:23:44	-4.15	-0.13	Switch to air pump
1:01:30	11:24:14	-4.13	-0.15	
1:02:00	11:24:44	-4.08	-0.15	
1:02:30	11:25:14	-4.04	-0.15	
1:03:00	11:25:44	-4.00	-0.15	
1:03:30	11:26:14	-3.94	-0.15	
1:04:00	11:26:44	-3.89	-0.15	
1:04:30	11:27:14	-3.85	-0.16	
1:05:00	11:27:44	-3.78	-0.16	
1:05:30	11:28:14	-3.72	-0.16	
1:06:00	11:28:44	-3.69	-0.16	
1:06:30	11:29:14	-3.65	-0.16	
1:07:00	11:29:44	-3.61	-0.16	
1:07:30	11:30:14	-3.59	-0.16	
1:08:00	11:30:44	-3.54	-0.16	
1:08:30	11:31:14	-3.50	-0.15	
1:09:00	11:31:44	-3.48	-0.16	
1:26:31	11:49:14	-3.44	-0.16	
1:26:31	11:49:14	-3.38	-0.16	
1:26:31	11:49:15	-3.31	-0.16	
1:26:31	11:49:15	-3.16	-0.18	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-1	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:26:31	11:49:15	-3.01	-0.16	
1:26:31	11:49:15	-2.86	-0.19	
1:26:31	11:49:15	-2.68	-0.18	
1:26:31	11:49:15	-2.60	-0.18	
1:26:31	11:49:15	-2.55	-0.18	
1:26:31	11:49:15	-2.48	-0.21	
1:26:32	11:49:15	-2.42	-0.21	
1:26:32	11:49:15	-2.37	-0.20	
1:26:32	11:49:15	-2.33	-0.18	
1:26:32	11:49:16	-2.29	-0.18	
1:27:00	11:49:44	-2.25	-0.19	
1:27:30	11:50:14	-2.71	-0.19	
1:28:00	11:50:44	-4.21	-0.19	
1:28:30	11:51:14	-5.04	-0.19	
1:29:00	11:51:44	-5.08	-0.19	
1:29:30	11:52:14	-4.97	-0.19	
1:30:00	11:52:44	-4.89	-0.19	
1:30:30	11:53:14	-4.81	-0.19	
1:31:00	11:53:44	-4.75	-0.18	
1:31:30	11:54:14	-5.08	-0.18	
1:32:00	11:54:44	-5.08	-0.19	
1:32:30	11:55:14	-5.08	-0.19	
1:33:00	11:55:44	-5.08	-0.19	
1:33:30	11:56:14	-5.08	-0.19	
1:34:00	11:56:44	-5.08	-0.19	
1:34:30	11:57:14	-5.08	-0.19	
1:35:00	11:57:44	-5.08	-0.20	
1:35:30	11:58:14	-5.08	-0.21	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-1	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:36:00	11:58:44	-5.08	-0.21	
1:36:30	11:59:14	-5.08	-0.21	
1:37:00	11:59:44	-5.08	-0.21	
1:37:30	12:00:14	-5.08	-0.21	
1:38:00	12:00:44	-5.08	-0.21	
1:38:30	12:01:14	-5.08	-0.21	
1:39:00	12:01:44	-4.43	-0.21	
1:39:30	12:02:14	-4.40	-0.21	
2:18:32	12:41:16	-4.36	-0.21	
2:20:02	12:42:46	-4.36	-0.21	
2:20:11	12:42:55	-4.36	-0.21	

Pump Test Data

Cook's Country Store
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Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-3	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:00:00	12:49:19	0.00	0.00	
0:00:30	12:49:49	0.01	0.02	
0:01:00	12:50:19	0.01	0.02	
0:01:30	12:50:49	0.01	0.02	
0:02:00	12:51:19	0.01	0.02	
0:02:30	12:51:49	0.01	0.02	
0:03:00	12:52:19	0.01	0.02	
0:03:30	12:52:49	0.01	0.00	
0:04:00	12:53:19	0.00	0.00	
0:04:30	12:53:49	0.01	0.02	
0:05:00	12:54:19	0.01	0.02	
0:05:30	12:54:49	0.01	0.02	
0:06:00	12:55:19	0.01	0.02	
0:06:30	12:55:49	0.01	0.00	
0:07:00	12:56:19	0.01	0.02	
0:07:30	12:56:49	0.01	0.02	
0:08:00	12:57:19	0.01	0.02	
0:08:30	12:57:49	0.01	0.02	
0:09:00	12:58:19	0.01	0.00	
0:09:30	12:58:49	0.01	0.00	
0:10:00	12:59:19	0.01	0.00	
0:10:30	12:59:49	0.01	0.00	
0:11:00	13:00:19	0.01	0.00	
0:11:30	13:00:49	0.01	0.00	
0:12:00	13:01:19	0.01	0.02	
0:12:30	13:01:49	0.01	0.02	
0:13:00	13:02:19	0.01	0.02	
0:13:30	13:02:49	0.01	0.06	
0:44:18	13:33:37	0.01	0.06	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-3	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:44:18	13:33:37	0.01	0.05	
0:44:18	13:33:37	0.01	0.05	
0:44:18	13:33:37	0.01	0.04	
0:44:18	13:33:37	0.00	0.05	
0:44:18	13:33:37	0.01	0.01	
0:44:18	13:33:37	0.01	0.06	
0:44:19	13:33:37	0.01	0.06	
0:44:19	13:33:37	0.01	0.06	
0:44:19	13:33:37	0.01	0.06	
0:44:19	13:33:38	0.00	0.04	
0:44:19	13:33:38	0.00	0.04	
0:44:19	13:33:38	-0.01	0.00	
0:44:19	13:33:38	-0.01	-0.01	
0:44:19	13:33:38	0.00	0.00	
0:44:19	13:33:38	0.01	0.00	
0:44:19	13:33:38	0.00	0.00	
0:44:20	13:33:38	0.00	0.00	
0:44:20	13:33:38	0.01	0.00	
0:44:20	13:33:38	0.01	0.02	
0:44:20	13:33:39	0.00	0.00	
0:44:20	13:33:39	0.01	0.00	
0:44:20	13:33:39	0.01	0.02	
0:44:20	13:33:39	0.01	0.05	
0:44:20	13:33:39	0.01	0.05	
0:44:20	13:33:39	0.01	0.06	
0:44:30	13:33:49	0.00	0.05	
0:45:00	13:34:19	0.01	0.02	
0:45:30	13:34:49	0.01	0.05	
0:46:00	13:35:19	0.01	0.06	

Pump Test Data

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June 28,2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well) RW-1 L.L. Change = ↓ + = ↑	RADIO 3 MW-3 L.L. Change - = ↓ + = ↑	COMMENTS
0:46:30	13:35:49	0.01	0.06	
0:47:00	13:36:19	0.01	0.06	
0:47:30	13:36:49	0.01	0.05	
0:48:00	13:37:19	0.01	0.05	
0:48:30	13:37:49	0.01	0.06	
0:49:00	13:38:19	0.01	0.06	
0:49:30	13:38:49	0.01	0.06	
0:50:00	13:39:19	0.01	0.04	
0:50:30	13:39:49	0.01	0.04	
0:51:00	13:40:19	0.00	0.06	
0:51:30	13:40:49	0.01	0.06	
0:52:00	13:41:19	0.00	0.06	
0:52:30	13:41:49	0.00	0.06	
0:53:00	13:42:19	0.00	0.06	
0:53:30	13:42:49	0.01	0.06	
0:54:00	13:43:19	0.01	0.06	
0:54:30	13:43:49	0.01	0.06	
0:55:00	13:44:19	0.00	0.06	
0:55:30	13:44:49	0.00	0.06	
0:56:00	13:45:19	0.00	0.04	
0:56:30	13:45:49	0.00	0.04	
0:57:00	13:46:19	0.00	0.06	
0:57:30	13:46:49	0.00	0.05	
0:58:00	13:47:19	0.00	0.05	
0:58:30	13:47:49	0.00	0.04	
0:59:00	13:48:19	0.00	0.04	
1:13:23	14:02:42	0.01	0.04	
1:13:23	14:02:42	0.00	0.04	
1:13:23	14:02:42	0.00	0.04	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well) RW-1 L.L. Change = ↓ + = ↑	RADIO 3 MW-3 L.L. Change - = ↓ + = ↑	COMMENTS
1:13:24	14:02:42	0.00	0.04	
1:13:24	14:02:42	0.01	0.04	
1:13:24	14:02:42	0.01	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:24	14:02:43	0.00	0.04	
1:13:25	14:02:43	0.01	0.04	
1:13:25	14:02:43	0.01	0.04	
1:13:25	14:02:43	0.00	0.06	
1:13:30	14:02:49	0.00	0.05	
1:14:00	14:03:19	0.00	0.04	
1:14:30	14:03:49	0.00	0.04	
1:15:00	14:04:19	0.00	0.04	
1:15:30	14:04:49	0.00	0.04	
1:16:00	14:05:19	0.00	0.04	
1:16:30	14:05:49	0.00	0.04	
1:17:00	14:06:19	0.00	0.04	
1:17:30	14:06:49	0.00	0.04	
1:18:00	14:07:19	0.00	0.04	
1:18:30	14:07:49	0.00	0.04	
1:19:00	14:08:19	0.00	0.04	
1:19:30	14:08:49	0.00	0.04	
1:20:00	14:09:19	0.00	0.04	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-3	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:20:30	14:09:49	0.00	0.04	
1:21:00	14:10:19	0.00	0.04	
1:21:30	14:10:49	0.00	0.04	
1:22:00	14:11:19	0.00	0.03	
1:22:30	14:11:49	0.00	0.03	
1:23:00	14:12:19	0.00	0.01	
1:23:30	14:12:49	0.00	0.03	
1:24:00	14:13:19	0.00	0.03	
1:24:30	14:13:49	0.00	0.02	
1:25:00	14:14:19	0.00	0.00	
1:25:30	14:14:49	0.00	-0.01	
1:26:00	14:15:19	0.00	-0.02	
1:26:30	14:15:49	0.00	0.00	
1:27:00	14:16:19	0.00	0.00	
1:27:30	14:16:49	0.00	0.00	
1:28:00	14:17:19	0.00	0.00	
2:06:28	14:55:46	0.00	0.00	
2:06:28	14:55:46	0.00	0.00	
2:06:28	14:55:46	0.00	0.00	
2:06:28	14:55:46	0.00	0.00	
2:06:28	14:55:47	0.00	0.01	
2:06:28	14:55:47	0.00	0.01	
2:06:28	14:55:47	0.00	0.01	
2:06:28	14:55:47	0.00	0.01	
2:06:28	14:55:47	0.00	0.04	
2:06:28	14:55:47	0.01	0.01	
2:06:29	14:55:47	0.01	0.01	
2:06:29	14:55:47	0.01	0.01	
2:06:29	14:55:47	0.01	0.01	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-3	
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
2:06:29	14:55:48	0.01	0.01	
2:06:29	14:55:48	0.00	0.01	
2:06:29	14:55:48	0.01	0.02	
2:06:29	14:55:48	0.01	0.05	
2:06:29	14:55:48	0.01	0.01	
2:06:29	14:55:48	0.01	0.02	
2:06:29	14:55:48	0.01	0.02	
2:06:30	14:55:48	0.01	0.02	
2:06:30	14:55:48	0.01	0.02	
2:06:30	14:55:49	0.01	0.02	
2:06:30	14:55:49	0.01	0.02	
2:06:30	14:55:49	0.01	0.02	
2:06:30	14:55:49	0.01	0.02	
2:06:30	14:55:49	0.01	0.05	
2:06:30	14:55:49	0.01	0.02	
2:06:30	14:55:49	0.01	0.04	
2:06:31	14:55:49	0.01	0.05	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3	COMMENTS
		RW-1	MW-3	
		L.L. Change = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
2:06:31	14:55:49	0.01	0.02	
2:06:33	14:55:52	0.01	0.04	
2:07:00	14:56:19	0.01	0.05	
2:07:30	14:56:49	0.01	0.04	
2:08:00	14:57:19	0.01	0.02	
2:08:30	14:57:49	0.01	0.04	
2:09:00	14:58:19	0.01	0.02	
2:09:30	14:58:49	0.01	0.02	
2:10:00	14:59:19	0.01	0.02	
2:10:30	14:59:49	0.01	0.02	
2:11:00	15:00:19	0.01	0.02	
2:11:30	15:00:49	0.01	0.03	
2:12:00	15:01:19	0.01	0.05	
2:12:30	15:01:49	0.01	0.05	End test. shut off pump
2:13:00	15:02:19	0.01	0.02	
2:13:30	15:02:49	0.01	0.02	
2:14:00	15:03:19	0.06	0.05	
2:14:30	15:03:49	0.10	0.02	
2:15:00	15:04:19	0.14	0.06	
2:15:30	15:04:49	0.17	0.07	
2:16:00	15:05:19	0.20	0.06	
2:16:30	15:05:49	0.23	0.03	
2:17:00	15:06:19	0.25	0.05	
2:17:30	15:06:49	0.30	0.06	
2:18:00	15:07:19	0.33	0.05	
2:18:30	15:07:49	0.35	0.05	
2:19:00	15:08:19	0.38	0.04	
2:19:30	15:08:49		0.02	

Pump Test Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 5 MW-7 L.L. Change - = ↓ + = ↑	RADIO 6 MW-2 L.L. Change - = ↓ + = ↑	RADIO 7 MW-4 L.L. Change - = ↓ + = ↑	COMMENTS
0:00:00	10:22:44	0.00	0.00	0.00	
0:00:30	10:23:14	0.00	0.00	0.00	
0:01:00	10:23:44	0.01	0.00	0.00	
0:01:30	10:24:14	0.02	0.00	0.00	
0:02:00	10:24:44	0.02	0.00	0.00	
0:02:30	10:25:14	0.02	0.00	0.00	
0:03:00	10:25:44	0.02	0.01	0.00	
0:03:30	10:26:14	0.02	0.00	0.00	
0:04:00	10:26:44	0.02	0.00	0.00	
0:04:30	10:27:14	0.02	-0.01	0.00	
0:05:00	10:27:44	0.02	-0.01	0.00	
0:05:30	10:28:14	0.02	-0.01	0.00	
0:06:00	10:28:44	0.02	-0.01	-0.01	
0:06:30	10:29:14	0.02	-0.01	-0.01	
0:07:00	10:29:44	0.02	0.00	0.00	
0:07:30	10:30:14	0.02	-0.01	-0.01	
0:08:00	10:30:44	0.03	-0.01	-0.01	
0:08:30	10:31:14	0.04	-0.01	-0.01	Begin pumping down RW-1
0:09:00	10:31:44	0.03	-0.01	-0.01	
0:09:30	10:32:14	0.04	-0.01	-0.01	

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ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:10:00	10:32:44	0.04	-0.01	-0.01	
0:10:30	10:33:14	0.04	-0.02	-0.01	
0:11:00	10:33:44	0.04	-0.02	0.00	
0:11:30	10:34:14	0.03	-0.02	0.00	
0:12:00	10:34:44	0.04	-0.02	0.00	
0:12:30	10:35:14	0.05	-0.01	0.00	
0:13:00	10:35:44	0.05	-0.01	0.00	
0:38:37	11:01:21	0.04	-0.01	0.00	
0:38:38	11:01:22	0.04	-0.01	0.00	
0:38:39	11:01:22	0.04	-0.01	-0.01	
0:38:39	11:01:23	0.05	-0.01	-0.01	
0:38:40	11:01:24	0.06	-0.01	-0.01	
0:38:41	11:01:24	0.07	-0.01	-0.01	
0:38:41	11:01:25	0.05	0.01	-0.01	
0:38:42	11:01:25	0.06	-0.01	-0.01	
0:38:42	11:01:26	0.06	0.00	-0.01	
0:38:43	11:01:26	0.07	0.00	-0.01	
0:38:43	11:01:27	0.07	0.00	-0.01	
0:38:44	11:01:27	0.07	0.00	-0.01	
0:38:44	11:01:28	0.08	0.00	-0.01	
0:38:45	11:01:28	0.09	0.02	-0.01	
0:38:45	11:01:29	0.08	0.01	-0.01	
0:38:46	11:01:29	0.07	0.00	-0.01	

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ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:38:46	11:01:30	0.07	-0.02	-0.01	
0:38:47	11:01:30	0.07	0.00	-0.03	
0:38:47	11:01:31	0.09	0.01	-0.03	
0:38:48	11:01:31	0.07	0.01	-0.03	
0:39:00	11:01:44	0.07	0.01	-0.03	
0:39:30	11:02:14	0.07	0.01	-0.03	
0:40:00	11:02:44	0.07	0.01	-0.03	
0:40:30	11:03:14	0.08	0.01	-0.03	
0:41:00	11:03:44	0.07	0.01	-0.03	
0:41:30	11:04:14	0.07	0.01	-0.03	
0:42:00	11:04:44	0.07	0.01	-0.03	
0:42:30	11:05:14	0.07	0.01	-0.03	
0:43:00	11:05:44	0.08	0.01	-0.03	
0:43:30	11:06:14	0.07	0.01	-0.03	
0:44:00	11:06:44	0.07	0.01	-0.03	
0:44:30	11:07:14	0.07	0.01	-0.03	
0:45:00	11:07:44	0.07	0.01	-0.03	
0:45:30	11:08:14	0.07	0.00	-0.03	
0:46:00	11:08:44	0.07	0.00	-0.03	
0:46:30	11:09:14	0.07	0.01	-0.03	
0:47:00	11:09:44	0.08	0.01	-0.03	
0:47:30	11:10:14	0.08	0.00	-0.03	
0:48:00	11:10:44	0.07	0.00	-0.03	

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ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:48:30	11:11:14	0.09	0.01	-0.03	
0:49:00	11:11:44	0.09	0.01	-0.03	
0:49:30	11:12:14	0.07	0.00	-0.03	
0:50:00	11:12:44	0.07	0.00	-0.03	
0:50:30	11:13:14	0.07	0.00	-0.03	
0:51:00	11:13:44	0.07	-0.01	-0.03	
0:51:30	11:14:14	0.07	-0.01	-0.03	
0:52:00	11:14:44	0.07	0.00	-0.03	
0:52:30	11:15:14	0.07	-0.01	-0.03	
0:53:00	11:15:44	0.07	-0.01	-0.03	
0:53:30	11:16:14	0.07	-0.01	-0.04	
0:54:01	11:16:45	0.07	-0.01	-0.04	
0:54:30	11:17:14	0.07	-0.02	-0.04	
0:55:00	11:17:44	0.07	-0.02	-0.04	
0:55:30	11:18:14	0.07	-0.02	-0.04	
0:56:00	11:18:44	0.07	-0.02	-0.04	
0:56:30	11:19:14	0.07	-0.02	-0.04	
0:57:00	11:19:44	0.07	-0.01	-0.04	
0:57:30	11:20:14	0.08	0.00	-0.04	
0:58:00	11:20:44	0.08	-0.01	-0.04	
0:58:30	11:21:14	0.08	-0.01	-0.04	
0:59:00	11:21:44	0.07	-0.01	-0.04	
0:59:30	11:22:14	0.07	-0.01	-0.04	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:00:00	11:22:44	0.07	0.00	-0.04	
1:00:30	11:23:14	0.09	0.01	-0.04	
1:01:00	11:23:44	0.09	-0.01	-0.04	
1:01:30	11:24:14	0.09	-0.01	-0.04	
1:02:00	11:24:44	0.09	0.01	-0.04	
1:02:30	11:25:14	0.09	0.01	-0.04	
1:03:00	11:25:44	0.09	0.00	-0.04	
1:03:30	11:26:14	0.09	-0.01	-0.04	
1:04:00	11:26:44	0.09	-0.01	-0.04	
1:04:30	11:27:14	0.07	-0.01	-0.04	
1:05:00	11:27:44	0.09	-0.01	-0.04	
1:05:30	11:28:14	0.09	-0.01	-0.04	
1:06:00	11:28:44	0.09	0.00	-0.04	
1:06:30	11:29:14	0.08	-0.01	-0.05	
1:07:00	11:29:44	0.07	-0.01	-0.05	
1:07:30	11:30:14	0.07	-0.01	-0.05	
1:08:00	11:30:44	0.09	-0.01	-0.05	
1:08:30	11:31:14	0.09	-0.01	-0.06	
1:09:00	11:31:44	0.09	-0.01	-0.05	
1:26:31	11:49:14	0.09	-0.01	-0.06	
1:26:31	11:49:14	0.09	0.00	-0.06	
1:26:31	11:49:15	0.09	-0.01	-0.06	
1:26:31	11:49:15	0.07	-0.01	-0.05	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:26:31	11:49:15	0.08	-0.01	-0.06	
1:26:31	11:49:15	0.07	-0.01	-0.06	
1:26:31	11:49:15	0.07	-0.01	-0.06	
1:26:31	11:49:15	0.09	-0.01	-0.06	
1:26:31	11:49:15	0.07	-0.02	-0.06	
1:26:31	11:49:15	0.06	-0.02	-0.06	
1:26:31	11:49:15	0.07	-0.02	-0.06	
1:26:32	11:49:15	0.07	-0.01	-0.06	
1:26:32	11:49:15	0.09	0.01	-0.06	
1:26:32	11:49:16	0.07	0.00	-0.06	
1:27:00	11:49:44	0.08	-0.01	-0.06	
1:27:30	11:50:14	0.07	-0.02	-0.06	
1:28:00	11:50:44	0.07	-0.01	-0.06	
1:28:30	11:51:14	0.08	-0.01	-0.06	
1:29:00	11:51:44	0.09	-0.01	-0.06	
1:29:30	11:52:14	0.09	-0.01	-0.06	
1:30:00	11:52:44	0.09	-0.01	-0.06	
1:30:30	11:53:14	0.09	0.00	-0.06	
1:31:00	11:53:44	0.09	-0.01	-0.06	
1:31:30	11:54:14	0.09	0.01	-0.06	
1:32:00	11:54:44	0.09	0.00	-0.06	
1:32:30	11:55:14	0.09	-0.01	-0.06	
1:33:00	11:55:44	0.09	-0.01	-0.06	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016

ELAPSED TIME hh/mm/ss	Time	MW-7	MW-2	MW-4	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:33:30	11:56:14	0.09	-0.01	-0.07	
1:34:00	11:56:44	0.09	-0.01	-0.06	
1:34:30	11:57:14	0.09	-0.01	-0.06	
1:35:00	11:57:44	0.09	-0.01	-0.06	
1:35:30	11:58:14	0.09	-0.01	-0.06	
1:36:00	11:58:44	0.09	-0.01	-0.06	
1:36:30	11:59:14	0.08	-0.01	-0.06	
1:37:00	11:59:44	0.08	-0.01	-0.06	
1:37:30	12:00:14	0.07	-0.01	-0.07	
1:38:00	12:00:44	0.07	-0.02	-0.07	
1:38:30	12:01:14	0.07	-0.02	-0.06	
1:39:00	12:01:44	0.07	-0.01	-0.07	
1:39:30	12:02:14	0.07	-0.01	-0.07	
2:18:32	12:41:16	0.08	-0.01	-0.08	
2:20:02	12:42:46	0.08	-0.01	-0.08	
2:20:11	12:42:55	0.08	-0.01	-0.08	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	RADIO 5 MW-5 L.L. Change - = ↓ + = ↑	RADIO 6 MW-6 L.L. Change - = ↓ + = ↑	RADIO 7 MW-7 L.L. Change - = ↓ + = ↑	COMMENTS
0:00:00	12:49:19	0.00	0.00	0.00	
0:00:30	12:49:49	0.00	0.00	0.00	
0:01:00	12:50:19	0.00	0.01	0.00	
0:01:30	12:50:49	0.00	0.02	0.00	
0:02:00	12:51:19	0.00	0.02	0.00	
0:02:30	12:51:49	0.00	0.00	0.00	
0:03:00	12:52:19	0.00	0.00	0.00	
0:03:30	12:52:49	0.00	0.01	0.00	
0:04:00	12:53:19	0.00	0.01	0.00	
0:04:30	12:53:49	0.00	0.00	0.00	
0:05:00	12:54:19	0.00	0.01	0.00	
0:05:30	12:54:49	0.00	0.01	0.00	
0:06:00	12:55:19	0.00	0.01	0.00	
0:06:30	12:55:49	0.00	0.01	0.00	
0:07:00	12:56:19	0.00	0.02	0.00	
0:07:30	12:56:49	0.00	0.01	0.00	
0:08:00	12:57:19	0.00	0.01	0.00	
0:08:30	12:57:49	0.00	0.01	0.00	
0:09:00	12:58:19	0.00	0.02	0.00	
0:09:30	12:58:49	0.00	0.01	0.00	
0:10:00	12:59:19	0.00	0.01	0.00	
0:10:30	12:59:49	0.00	0.01	0.00	
0:11:00	13:00:19	0.00	0.01	0.00	
0:11:30	13:00:49	0.00	0.01	0.00	
0:12:00	13:01:19	0.00	0.01	0.00	
0:12:30	13:01:49	0.00	0.00	0.00	
0:13:00	13:02:19	0.01	0.02	0.00	
0:13:30	13:02:49	0.02	0.04	0.00	
0:44:18	13:33:37	0.02	0.05	0.00	
0:44:18	13:33:37	0.02	0.03	0.00	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	MW-5	MW-6	MW-7	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:44:18	13:33:37	0.02	0.02	0.00	
0:44:18	13:33:37	0.02	0.03	0.00	
0:44:18	13:33:37	0.00	0.02	0.00	
0:44:18	13:33:37	0.00	0.02	0.00	
0:44:18	13:33:37	0.00	0.03	0.00	
0:44:19	13:33:37	0.01	0.03	0.00	
0:44:19	13:33:37	0.01	0.02	0.00	
0:44:19	13:33:37	0.00	0.02	0.00	
0:44:19	13:33:38	0.00	0.00	0.00	
0:44:19	13:33:38	0.00	0.02	0.00	
0:44:19	13:33:38	0.00	-0.01	-0.01	
0:44:19	13:33:38	-0.02	-0.01	-0.01	
0:44:19	13:33:38	-0.01	-0.01	-0.01	
0:44:19	13:33:38	0.00	-0.01	0.00	
0:44:19	13:33:38	0.00	0.00	0.00	
0:44:20	13:33:38	0.00	0.01	0.00	
0:44:20	13:33:38	0.00	0.00	0.00	
0:44:20	13:33:38	0.00	0.00	0.00	
0:44:20	13:33:39	0.00	0.01	0.00	
0:44:20	13:33:39	0.00	0.01	0.00	
0:44:20	13:33:39	0.00	0.01	0.00	
0:44:20	13:33:39	0.00	0.03	0.00	
0:44:20	13:33:39	0.00	0.03	0.00	
0:44:20	13:33:39	0.02	0.03	0.00	
0:44:30	13:33:49	0.00	0.02	0.00	
0:45:00	13:34:19	0.00	0.02	0.00	
0:45:30	13:34:49	0.00	0.03	0.00	
0:46:00	13:35:19	0.00	0.03	0.00	
0:46:30	13:35:49	0.00	0.03	0.00	
0:47:00	13:36:19	0.00	0.03	0.00	
0:47:30	13:36:49	0.00	0.02	0.00	
0:48:00	13:37:19	0.00	0.02	0.00	
0:48:30	13:37:49	0.00	0.02	0.00	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	MW-5	MW-6	MW-7	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
0:49:00	13:38:19	0.00	0.02	0.00	
0:49:30	13:38:49	0.00	0.02	0.00	
0:50:00	13:39:19	0.00	0.01	0.00	
0:50:30	13:39:49	0.00	0.01	0.00	
0:51:00	13:40:19	0.00	0.02	0.00	
0:51:30	13:40:49	0.00	0.02	0.00	
0:52:00	13:41:19	0.00	0.02	0.00	
0:52:30	13:41:49	0.00	0.02	0.00	
0:53:00	13:42:19	0.00	0.03	0.00	
0:53:30	13:42:49	0.00	0.02	0.00	
0:54:00	13:43:19	0.00	0.03	0.00	
0:54:30	13:43:49	0.00	0.02	0.00	
0:55:00	13:44:19	0.00	0.02	0.00	
0:55:30	13:44:49	0.00	0.01	0.00	
0:56:00	13:45:19	0.00	0.01	0.00	
0:56:30	13:45:49	0.00	0.01	-0.01	
0:57:00	13:46:19	0.00	0.01	-0.01	
0:57:30	13:46:49	0.00	0.01	-0.01	
0:58:00	13:47:19	0.00	0.01	-0.01	
0:58:30	13:47:49	0.00	0.01	-0.01	
0:59:00	13:48:19	0.00	0.01	-0.01	
1:13:23	14:02:42	0.00	0.01	-0.01	
1:13:23	14:02:42	0.00	0.01	-0.01	
1:13:23	14:02:42	0.00	0.00	-0.01	
1:13:24	14:02:42	0.00	0.00	-0.01	
1:13:24	14:02:42	0.00	0.00	-0.01	
1:13:24	14:02:42	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.00	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	MW-5	MW-6	MW-7	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:24	14:02:43	0.00	0.01	-0.01	
1:13:25	14:02:43	0.00	0.00	-0.01	
1:13:25	14:02:43	0.00	0.02	-0.01	
1:13:25	14:02:43	0.00	0.03	-0.01	
1:13:30	14:02:49	0.00	0.02	-0.01	
1:14:00	14:03:19	0.00	0.02	-0.01	
1:14:30	14:03:49	0.00	0.01	-0.01	
1:15:00	14:04:19	0.00	0.01	-0.01	
1:15:30	14:04:49	0.00	0.01	-0.01	
1:16:00	14:05:19	0.00	0.01	-0.01	
1:16:30	14:05:49	0.00	0.01	-0.01	
1:17:00	14:06:19	0.00	0.00	-0.01	
1:17:30	14:06:49	0.00	0.01	-0.01	
1:18:00	14:07:19	0.00	0.01	-0.01	
1:18:30	14:07:49	0.00	0.02	-0.02	
1:19:00	14:08:19	0.00	0.02	-0.01	
1:19:30	14:08:49	0.00	0.01	-0.02	
1:20:00	14:09:19	0.00	0.01	-0.02	
1:20:30	14:09:49	0.00	0.01	-0.02	
1:21:00	14:10:19	0.00	0.01	-0.03	
1:21:30	14:10:49	0.00	0.01	-0.03	
1:22:00	14:11:19	0.00	0.01	-0.03	
1:22:30	14:11:49	0.00	0.00	-0.03	
1:23:00	14:12:19	0.00	0.00	-0.03	
1:23:30	14:12:49	0.00	0.00	-0.03	
1:24:00	14:13:19	0.00	0.00	-0.03	
1:24:30	14:13:49	0.00	-0.01	-0.03	
1:25:00	14:14:19	0.00	-0.02	-0.03	
1:25:30	14:14:49	0.00	-0.03	-0.03	
1:26:00	14:15:19	0.00	-0.02	-0.03	
1:26:30	14:15:49	0.00	-0.02	-0.03	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

ELAPSED TIME hh/mm/ss	Time	MW-5	MW-6	MW-7	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
1:27:00	14:16:19	0.00	-0.02	-0.03	
1:27:30	14:16:49	0.00	-0.02	-0.02	
1:28:00	14:17:19	0.00	-0.02	-0.03	
2:06:28	14:55:46	0.00	-0.01	-0.02	
2:06:28	14:55:46	0.00	-0.02	-0.02	
2:06:28	14:55:46	0.00	-0.02	-0.02	
2:06:28	14:55:46	0.00	-0.01	-0.02	
2:06:28	14:55:47	0.00	0.00	-0.02	
2:06:28	14:55:47	0.00	-0.01	-0.02	
2:06:28	14:55:47	0.00	0.00	-0.02	
2:06:28	14:55:47	0.00	0.00	-0.02	
2:06:28	14:55:47	0.00	0.00	-0.02	
2:06:28	14:55:47	0.00	-0.01	-0.02	
2:06:29	14:55:47	0.00	0.00	-0.02	
2:06:29	14:55:47	0.00	0.00	-0.03	
2:06:29	14:55:47	0.00	0.00	-0.03	
2:06:29	14:55:48	0.00	0.00	-0.03	
2:06:29	14:55:48	0.00	-0.01	-0.03	
2:06:29	14:55:48	0.00	0.00	-0.03	
2:06:29	14:55:48	0.00	0.01	-0.03	
2:06:29	14:55:48	0.00	0.00	-0.03	
2:06:29	14:55:48	0.00	0.01	-0.03	
2:06:29	14:55:48	0.00	0.00	-0.03	
2:06:30	14:55:48	0.00	0.01	-0.03	
2:06:30	14:55:48	0.00	-0.01	-0.03	
2:06:30	14:55:49	0.00	0.01	-0.03	
2:06:30	14:55:49	0.00	0.01	-0.03	
2:06:30	14:55:49	0.00	0.02	-0.03	
2:06:30	14:55:49	0.00	0.01	-0.03	
2:06:30	14:55:49	0.00	0.02	-0.03	
2:06:30	14:55:49	0.00	0.01	-0.03	
2:06:30	14:55:49	0.00	0.01	-0.03	
2:06:30	14:55:49	0.00	0.00	-0.03	

Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28,2016

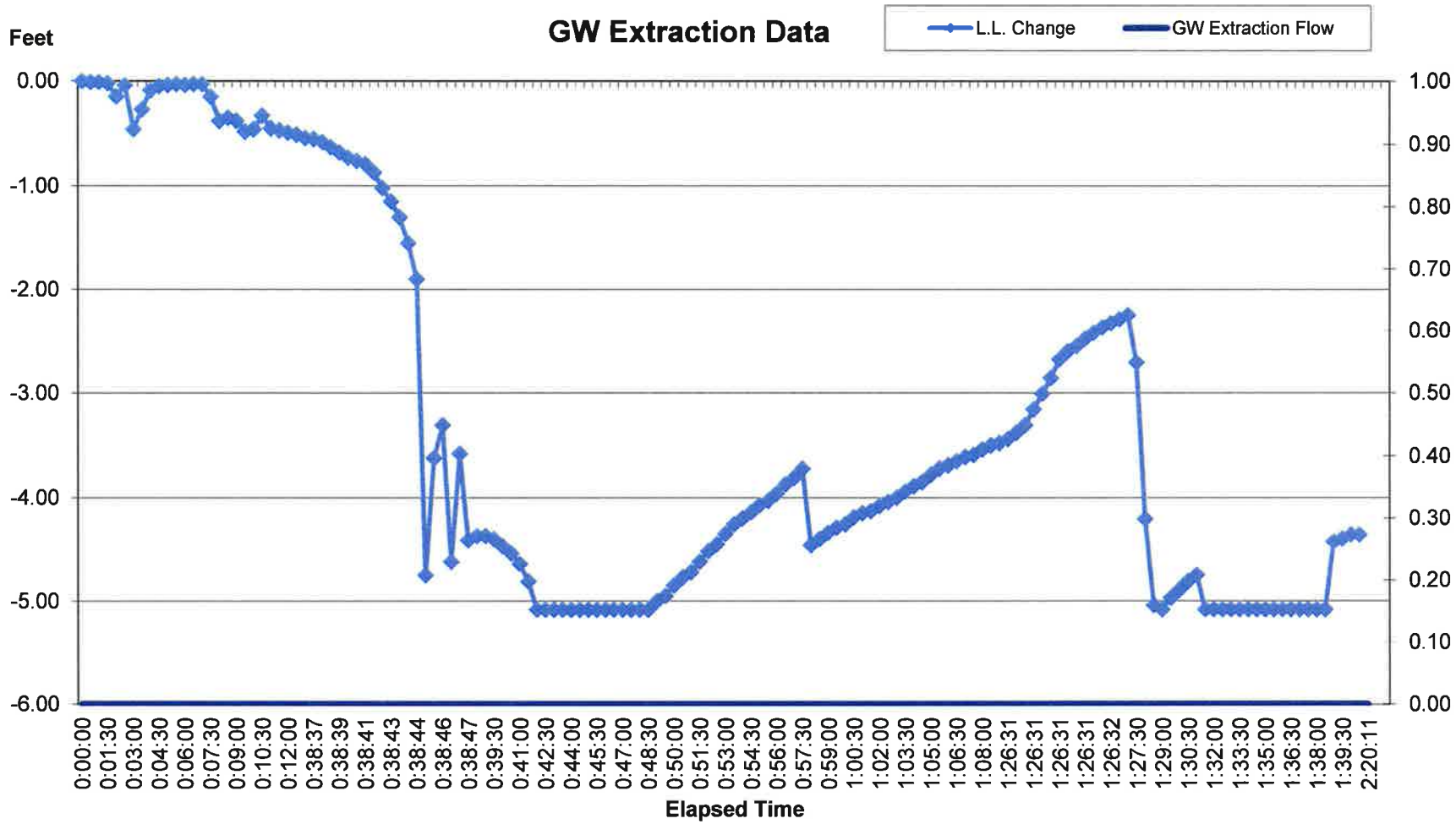
ELAPSED TIME hh/mm/ss	Time	MW-5	MW-6	MW-7	COMMENTS
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	
2:06:31	14:55:49	0.00	0.00	-0.03	
2:06:33	14:55:52	0.00	0.00	-0.03	
2:07:00	14:56:19	0.00	0.01	-0.03	
2:07:30	14:56:49	0.00	0.02	-0.03	
2:08:00	14:57:19	0.00	0.01	-0.03	
2:08:30	14:57:49	0.00	0.01	-0.03	
2:09:00	14:58:19	0.00	0.01	-0.03	
2:09:30	14:58:49	0.00	0.01	-0.03	
2:10:00	14:59:19	0.00	0.00	-0.03	
2:10:30	14:59:49	0.00	0.01	-0.03	
2:11:00	15:00:19	0.00	0.01	-0.03	
2:11:30	15:00:49	0.00	0.00	-0.03	
2:12:00	15:01:19	0.00	0.01	-0.03	
2:12:30	15:01:49		0.01	-0.03	End test. shut off pump
2:13:00	15:02:19		0.02	-0.02	
2:13:30	15:02:49		0.01	-0.03	
2:14:00	15:03:19		0.01	-0.02	
2:14:30	15:03:49		0.01	-0.02	
2:15:00	15:04:19		0.03	-0.02	
2:15:30	15:04:49		0.03	-0.02	
2:16:00	15:05:19		0.02	-0.02	
2:16:30	15:05:49		0.00	-0.02	
2:17:00	15:06:19		0.02	-0.02	
2:17:30	15:06:49		0.04	-0.02	
2:18:00	15:07:19		0.02	-0.03	
2:18:30	15:07:49		0.00	-0.02	
2:19:00	15:08:19		0.00	-0.02	
2:19:30	15:08:49		0.00	-0.02	
2:20:00	15:09:19		0.00	-0.02	

Pump Test Data

Cook's Country Store
24012 Cooks Road
Robertsdale, PA

June 28, 2016

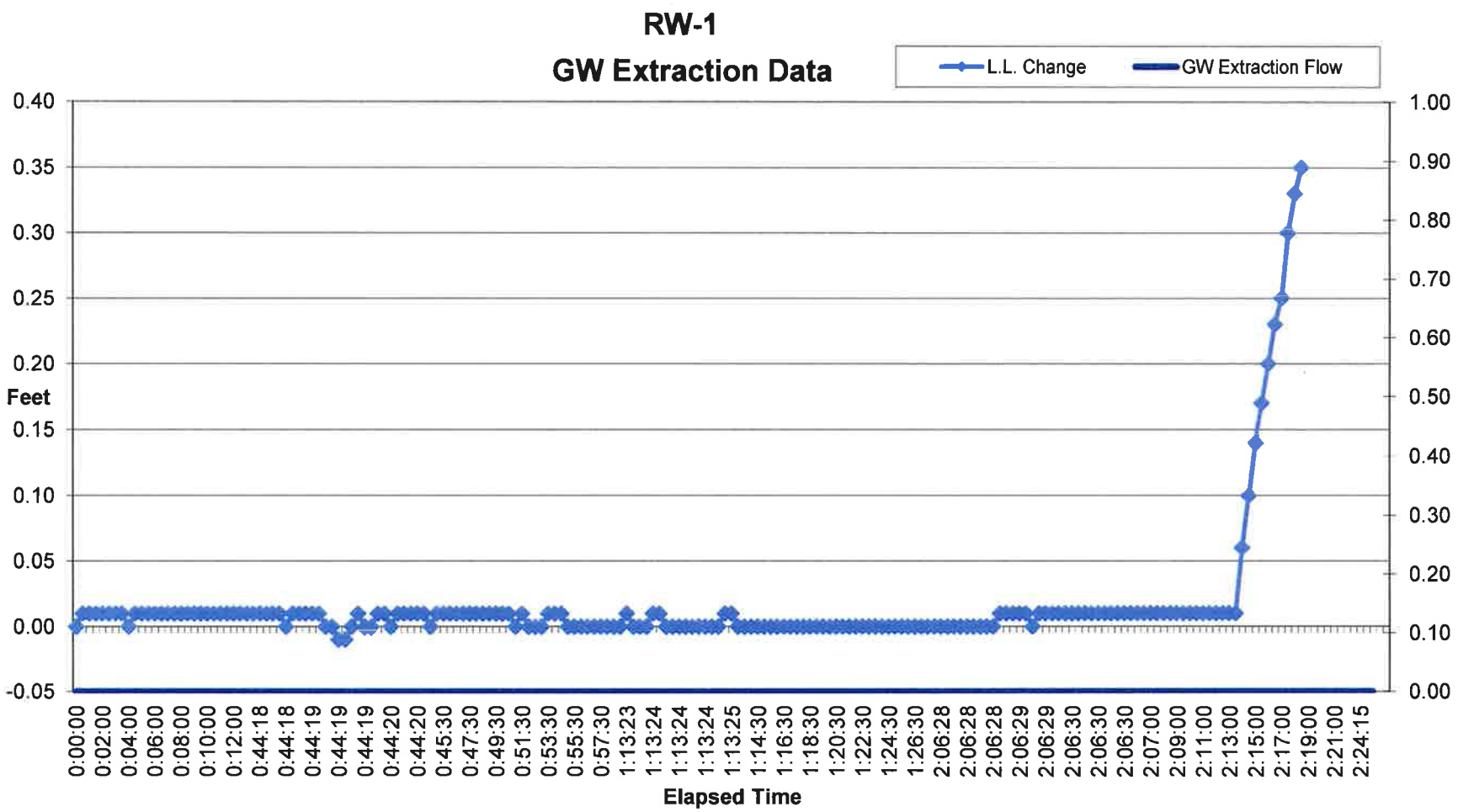
RW-1



Pump Test Data

Cook's Country Store
24012 Cooks Road
Robertsdale, PA

June 28, 2016

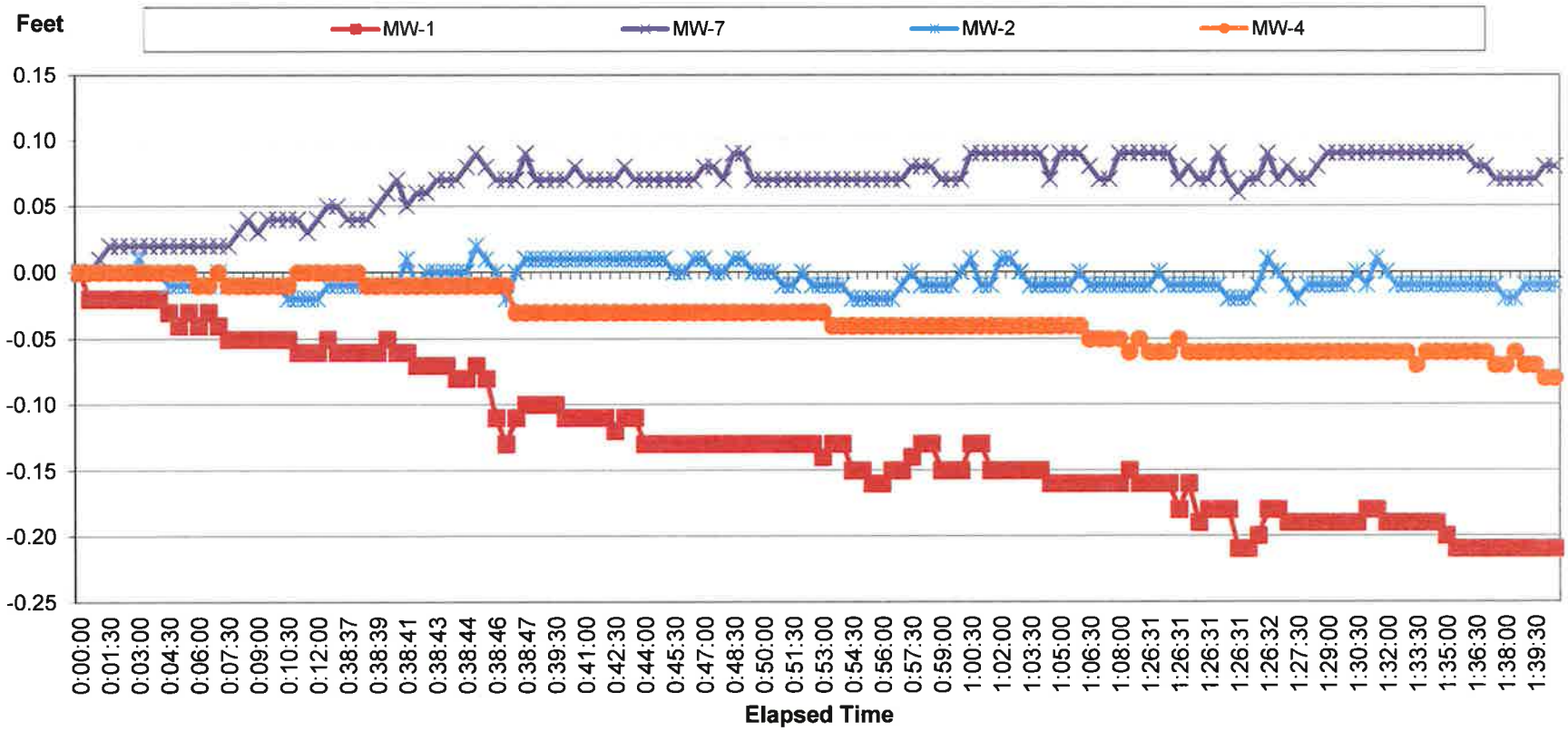


Pump Test Data

Cook's Country Store
24012 Cooks Road
Robertsdale, PA

June 28, 2016

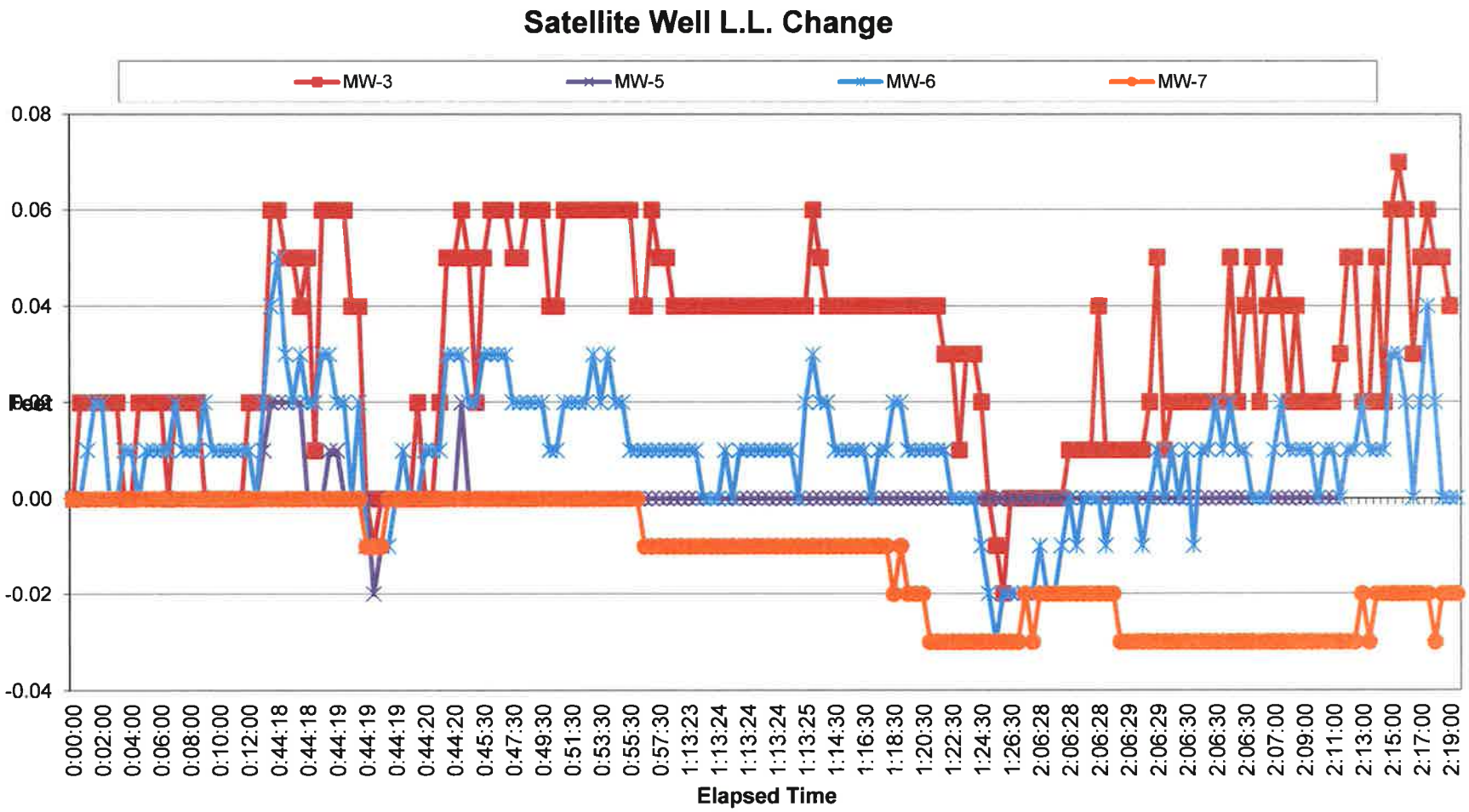
Satellite Well L.L. Change



Pump Test Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 28, 2016



VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
0:00:00	8:33:37	0.07	0.00	-0.53	0.00	0.00	0.06	65.00	
0:00:30	8:34:07	0.06	0.00	-0.54	0.00	0.00	0.06	65.20	
0:01:00	8:34:37	0.07	0.00	-0.54	0.00	0.00	0.06	65.20	
0:01:30	8:35:07	0.06	0.00	-0.53	0.00	0.00	0.06	65.20	
0:02:00	8:35:37	0.06	0.00	-0.54	0.00	0.00	0.06	65.10	
0:02:30	8:36:07	0.05	0.00	-0.54	0.00	0.00	0.06	65.20	
0:03:00	8:36:37	0.06	0.00	-0.54	0.00	0.00	0.06	65.20	
0:03:30	8:37:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.20	
0:04:00	8:37:37	0.05	0.00	-0.54	0.00	0.00	0.06	65.30	
0:04:30	8:38:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:05:00	8:38:37	0.05	0.00	-0.54	0.00	0.00	0.06	65.30	
0:05:30	8:39:07	0.05	0.00	-0.54	0.00	0.00	0.06	65.30	
0:06:00	8:39:37	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:06:30	8:40:07	0.05	0.00	-0.54	0.00	0.00	0.06	65.30	Begin pumping down RW-1
0:07:00	8:40:37	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:07:30	8:41:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:08:00	8:41:37	0.05	0.00	-0.54	0.00	0.00	0.06	65.20	
0:08:30	8:42:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.20	
0:09:00	8:42:37	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:09:30	8:43:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.20	
0:10:00	8:43:37	0.05	0.00	-0.53	0.00	0.00	0.06	65.30	
0:10:30	8:44:07	0.05	0.00	-0.54	0.00	0.00	0.06	65.20	
0:11:00	8:44:37	0.05	0.00	-0.53	0.00	0.00	0.06	65.20	
0:11:30	8:45:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.20	
0:12:00	8:45:37	0.05	0.00	-0.52	0.00	0.00	0.06	65.30	
0:12:30	8:46:07	0.05	0.00	-0.54	0.00	0.00	0.06	65.40	
0:14:01	8:47:38	0.04	0.00	-0.53	0.00	0.00	0.06	65.40	
0:14:01	8:47:38	0.05	0.00	-0.53	0.00	0.00	0.06	65.60	
0:14:30	8:48:07	0.05	0.00	-0.53	0.00	0.00	0.06	65.60	
0:15:00	8:48:37	0.03	0.00	-0.53	0.00	0.00	0.06	65.50	
0:15:30	8:49:07	0.03	0.00	-0.53	0.00	0.00	0.06	65.40	
0:16:00	8:49:37	0.04	0.00	-0.54	0.00	0.00	0.06	65.40	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
0:16:30	8:50:07	0.04	0.00	-0.53	0.00	0.00	0.06	65.40	
0:17:00	8:50:37	0.04	0.00	-0.53	0.00	0.00	0.06	65.40	
0:17:30	8:51:08	0.04	0.00	-0.53	0.00	0.00	0.06	65.40	
0:18:00	8:51:37	0.04	0.00	-0.53	0.00	0.00	0.06	65.40	
0:18:30	8:52:07	0.05	0.00	-0.52	0.00	0.00	0.06	65.40	
0:19:00	8:52:38	0.03	0.00	-0.54	0.00	0.00	0.06	65.20	
0:19:30	8:53:07	0.03	0.00	-0.52	0.00	0.00	0.06	65.30	
0:20:00	8:53:37	0.03	0.00	-0.54	0.00	0.00	0.06	65.20	
0:20:30	8:54:08	0.04	0.00	-0.54	0.00	0.00	0.06	65.20	
0:21:00	8:54:38	0.02	0.00	-0.53	0.00	0.00	0.06	65.30	
0:21:30	8:55:07	0.03	0.00	-0.53	0.00	0.00	0.06	65.30	
0:22:00	8:55:38	0.03	0.00	-0.53	0.00	0.00	0.06	65.30	
0:22:30	8:56:08	0.03	0.00	-0.54	0.00	0.00	0.06	65.40	
0:23:00	8:56:37	0.03	0.00	-0.54	0.00	0.00	0.06	65.50	
0:23:30	8:57:08	0.02	0.00	-0.52	0.00	0.00	0.06	65.40	
0:24:00	8:57:37	0.02	0.00	-0.53	0.00	0.00	0.06	65.40	
0:24:30	8:58:08	0.03	0.00	-0.53	0.00	0.00	0.06	65.40	
0:25:00	8:58:38	0.02	0.00	-0.53	0.00	0.00	0.06	65.30	
0:25:30	8:59:07	0.03	0.00	-0.54	0.00	0.00	0.06	65.20	
0:26:00	8:59:38	0.03	0.00	-0.53	0.00	0.00	0.06	65.30	
0:26:30	9:00:08	0.03	0.00	-0.53	0.00	0.00	0.06	65.30	
0:27:00	9:00:38	0.02	0.00	-0.52	0.00	0.00	0.06	65.20	
0:27:30	9:01:08	0.03	0.00	-0.54	0.00	0.00	0.06	65.30	Begin VEGE 707 blower
0:28:00	9:01:38	0.02	0.00	-0.53	0.00	0.00	0.06	65.20	
0:28:30	9:02:08	1.89	15.50	-2.45	142.70	137.50	1.76	66.50	
0:29:00	9:02:38	5.80	16.20	-6.24	24.90	0.00	0.13	78.60	
0:32:53	9:06:30	2.79	13.20	-6.34	23.60	0.00	0.58	81.70	
0:32:53	9:06:30	2.97	4.30	-3.52	127.20	128.40	1.43	117.50	
0:33:00	9:06:38	2.97	2.30	-3.55	127.20	129.90	1.39	120.80	
0:33:30	9:07:08	2.95	2.40	-3.50	127.90	129.60	1.39	123.00	Begin step 1 @41" WC
0:34:00	9:07:38	2.92	2.50	-3.49	126.70	127.20	1.37	124.90	
0:34:30	9:08:08	2.94	3.00	-3.47	129.10	130.30	1.39	126.90	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
0:35:00	9:08:38	2.93	2.70	-3.48	127.70	125.30	1.39	128.60	
0:35:30	9:09:08	2.95	3.00	-3.56	129.00	128.70	1.42	129.90	
0:36:00	9:09:38	2.95	2.80	-3.50	125.90	129.30	1.39	131.40	
0:36:30	9:10:08	2.95	2.40	-3.47	127.30	128.00	1.40	132.60	
0:37:00	9:10:38	2.93	2.40	-3.51	127.80	127.00	1.37	133.60	
0:37:30	9:11:08	2.91	2.50	-3.50	127.80	127.10	1.39	134.70	
0:38:00	9:11:38	2.89	3.10	-3.45	124.70	128.30	1.36	135.60	
0:38:30	9:12:08	2.87	2.60	-3.45	124.20	125.50	1.36	136.40	
0:39:00	9:12:38	2.86	1.60	-3.45	124.00	128.80	1.38	137.40	
0:39:30	9:13:08	2.90	2.90	-3.47	125.90	127.00	1.41	138.00	
0:40:00	9:13:38	2.90	3.00	-3.45	129.10	126.40	1.43	138.90	
0:40:30	9:14:08	2.90	2.40	-3.49	127.10	127.20	1.40	139.50	
0:41:00	9:14:38	2.90	2.50	-3.45	125.40	128.00	1.41	140.00	
0:41:30	9:15:08	2.88	2.40	-3.45	124.60	125.60	1.40	140.50	
0:42:00	9:15:38	2.87	2.30	-3.49	124.00	128.60	1.39	141.00	
0:42:30	9:16:08	2.83	3.00	-3.40	126.00	125.60	1.39	141.60	
0:43:00	9:16:38	2.85	2.90	-3.45	126.50	126.70	1.41	141.90	
0:43:30	9:17:08	2.88	4.30	-3.46	128.10	127.00	1.43	142.20	
0:44:00	9:17:38	2.90	3.50	-3.51	127.90	129.00	1.42	142.60	
0:44:30	9:18:08	2.89	2.80	-3.46	127.10	127.00	1.42	142.80	
0:45:00	9:18:38	2.87	2.40	-3.45	126.50	125.90	1.41	143.00	
0:45:30	9:19:08	2.85	2.40	-3.46	127.80	129.90	1.39	143.20	
0:46:00	9:19:38	2.87	2.50	-3.42	127.60	129.00	1.40	143.50	
0:46:30	9:20:08	2.86	2.40	-3.44	125.40	128.50	1.41	143.80	
0:47:00	9:20:38	2.84	2.80	-3.43	127.40	126.60	1.41	143.80	
0:47:30	9:21:08	2.85	3.00	-3.39	125.90	126.40	1.42	144.10	
0:48:40	9:22:18	2.82	2.80	-3.37	125.90	128.20	1.41	144.30	
0:49:00	9:22:38	2.84	2.60	-3.45	126.60	122.40	1.40	144.90	
0:49:30	9:23:08	2.84	2.50	-3.45	126.50	122.80	1.41	145.00	
0:50:00	9:23:38	2.82	2.20	-3.39	120.80	125.50	1.38	145.20	
0:50:30	9:24:08	2.82	2.80	-3.42	124.30	123.30	1.41	145.40	
0:51:00	9:24:38	2.84	3.00	-3.47	126.40	126.90	1.43	145.60	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
0:51:30	9:25:08	2.85	3.00	-3.40	125.10	123.00	1.41	145.70	
0:52:00	9:25:38	2.84	2.30	-3.45	125.30	125.40	1.41	145.80	
0:52:30	9:26:08	2.84	2.30	-3.39	125.80	126.50	1.40	146.00	
0:53:00	9:26:38	2.80	1.90	-3.42	124.30	125.20	1.40	146.20	
0:53:30	9:27:08	2.81	3.20	-3.42	126.00	122.10	1.41	146.30	
0:54:00	9:27:38	2.85	3.40	-3.43	125.40	127.40	1.42	146.40	
0:54:30	9:28:08	2.84	2.20	-3.42	125.80	128.50	1.41	146.30	
0:55:00	9:28:38	2.84	2.80	-3.40	126.70	122.60	1.41	146.50	
0:55:30	9:29:08	2.79	1.80	-3.38	122.00	121.60	1.36	146.50	
0:56:00	9:29:38	2.82	2.30	-3.39	123.90	125.30	1.40	146.70	
0:56:30	9:30:08	2.83	2.60	-3.43	124.70	123.80	1.42	146.80	
0:57:00	9:30:38	2.84	3.70	-3.42	127.70	127.00	1.45	146.90	
0:57:30	9:31:08	2.82	2.40	-3.42	123.90	123.90	1.41	147.10	
0:58:00	9:31:38	2.82	2.40	-3.39	125.20	125.30	1.38	147.10	
0:58:30	9:32:08	2.77	1.70	-3.34	123.50	122.20	1.39	147.30	
0:59:00	9:32:38	2.81	2.60	-3.39	124.80	119.80	1.38	147.30	
0:59:30	9:33:08	2.85	3.50	-3.45	125.70	122.80	1.42	147.30	
1:00:00	9:33:38	2.83	2.40	-3.40	123.40	125.40	1.39	147.60	
1:00:30	9:34:08	2.82	2.10	-3.39	124.80	128.80	1.39	147.70	
1:01:00	9:34:38	2.79	2.20	-3.35	123.60	124.00	1.36	147.70	
1:01:30	9:35:08	2.77	1.40	-3.39	124.70	123.80	1.37	147.70	
1:02:00	9:35:38	2.80	2.90	-3.40	125.40	124.20	1.41	147.70	
1:02:30	9:36:08	2.84	3.80	-3.45	127.10	123.10	1.45	147.90	
1:03:00	9:36:38	2.82	2.90	-3.40	124.60	127.00	1.41	147.90	
1:03:30	9:37:08	2.80	2.40	-3.45	125.20	126.60	1.41	147.90	
1:04:00	9:37:38	2.79	2.90	-3.40	125.30	125.30	1.42	147.70	
1:04:30	9:38:08	2.77	3.00	-3.38	123.80	124.10	1.40	147.90	
1:05:00	9:38:38	2.79	2.90	-3.39	125.20	124.50	1.41	147.70	
1:05:31	9:39:08	2.84	3.70	-3.44	125.20	121.70	1.45	147.80	
1:06:00	9:39:38	2.80	2.40	-3.40	126.50	127.10	1.41	147.90	
1:06:30	9:40:08	2.81	2.90	-3.40	125.40	124.90	1.40	147.90	
1:07:00	9:40:38	2.78	3.00	-3.39	125.30	129.00	1.41	147.90	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
1:07:30	9:41:08	2.80	2.80	-3.39	126.60	128.30	1.42	147.90	
1:08:00	9:41:38	2.81	2.40	-3.42	124.00	125.50	1.39	148.00	
1:08:30	9:42:08	2.81	2.70	-3.35	125.60	126.70	1.39	147.90	
1:09:00	9:42:38	2.75	1.50	-3.38	123.50	127.20	1.35	148.20	
1:09:30	9:43:08	2.78	3.00	-3.36	124.60	123.30	1.42	148.20	
1:10:00	9:43:38	2.82	3.50	-3.40	127.70	125.70	1.43	148.20	
1:10:30	9:44:08	2.80	2.40	-3.42	125.20	124.00	1.39	148.40	
1:11:00	9:44:38	2.79	2.40	-3.41	124.00	126.70	1.39	148.40	
1:11:30	9:45:08	2.75	2.50	-3.38	126.40	125.30	1.39	148.40	
1:12:00	9:45:38	2.82	3.60	-3.43	125.30	126.90	1.43	148.30	
1:12:30	9:46:08	2.50	12.00	-3.23	106.70	120.90	1.20	148.30	
1:13:00	9:46:38	2.79	2.40	-3.39	126.50	126.50	1.42	148.20	
1:13:30	9:47:08	2.76	1.50	-3.36	124.00	122.70	1.37	148.20	
1:14:00	9:47:38	2.78	2.90	-3.41	127.20	127.80	1.44	148.20	
1:14:30	9:48:08	2.83	3.60	-3.39	125.30	126.70	1.42	148.30	
1:15:00	9:48:38	2.81	2.40	-3.42	126.30	125.90	1.40	148.30	
1:15:30	9:49:08	2.75	1.90	-3.32	125.40	123.30	1.39	148.40	
1:16:00	9:49:38	2.78	3.00	-3.36	124.10	122.10	1.40	148.20	
1:16:30	9:50:08	2.81	2.20	-3.42	125.80	126.00	1.42	148.20	
1:17:00	9:50:38	2.79	2.30	-3.42	126.60	123.30	1.41	148.40	
1:17:30	9:51:08	2.76	2.00	-3.33	123.50	127.20	1.35	148.20	
1:18:00	9:51:38	2.81	3.80	-3.43	127.20	128.10	1.44	148.40	
1:18:30	9:52:08	2.81	2.40	-3.45	125.40	126.00	1.39	148.40	
1:28:57	10:02:34	2.76	1.60	-3.42	124.10	125.60	1.40	148.50	
1:28:59	10:02:36	2.78	3.10	-3.39	122.80	123.00	1.41	148.60	
1:29:00	10:02:38	2.81	2.40	-3.39	125.30	122.20	1.41	148.40	
1:29:02	10:02:39	2.74	3.00	-3.42	125.20	126.90	1.39	148.80	
1:29:02	10:02:40	2.82	3.10	-3.34	125.20	124.60	1.41	148.90	
1:29:30	10:03:08	2.79	2.70	-3.45	125.30	125.20	1.42	149.00	
1:30:00	10:03:38	2.81	2.40	-3.46	124.20	121.60	1.39	148.80	
1:30:30	10:04:08	2.77	2.20	-3.37	125.30	123.80	1.41	148.70	
1:31:00	10:04:38	2.76	3.50	-3.38	124.00	120.70	1.41	148.90	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
1:31:30	10:05:08	2.78	2.80	-3.35	124.20	127.60	1.43	148.90	
1:32:00	10:05:38	2.77	2.40	-3.40	124.20	124.00	1.40	149.00	
1:32:30	10:06:08	2.78	2.70	-3.39	126.30	126.30	1.40	149.00	
1:33:00	10:06:38	2.77	2.90	-3.36	124.80	123.20	1.41	149.10	
1:33:30	10:07:08	2.81	2.90	-3.39	123.90	121.90	1.40	149.10	
1:34:00	10:07:38	2.76	2.30	-3.39	125.20	125.50	1.40	149.30	
1:34:30	10:08:08	2.73	2.80	-3.36	125.80	123.30	1.40	149.10	
1:35:00	10:08:38	2.76	2.90	-3.42	125.40	121.50	1.42	149.20	
1:35:30	10:09:08	2.77	2.50	-3.39	124.20	124.10	1.40	149.20	
1:36:00	10:09:38	2.76	2.80	-3.39	125.30	120.30	1.41	149.30	
1:36:30	10:10:08	2.74	3.10	-3.36	124.60	123.40	1.42	149.20	Begin step 2 max vac with 707 blower
1:37:00	10:10:38	5.58	11.10	-6.13	15.30	0.00	0.11	147.90	
1:37:30	10:11:08	5.30	11.20	-5.73	13.50	0.00	0.02	144.10	
1:38:00	10:11:38	5.09	6.20	-5.46	11.50	0.00	0.00	141.20	
1:38:31	10:12:08	5.00	6.30	-5.64	16.00	0.00	0.23	138.60	
1:39:01	10:12:38	5.21	9.30	-5.66	9.20	0.00	0.00	137.00	
1:39:30	10:13:08	5.06	6.80	-5.55	17.40	0.00	0.26	135.80	
1:40:00	10:13:38	4.77	8.00	-5.21	13.50	0.00	0.00	134.70	
1:40:30	10:14:08	4.97	7.20	-5.56	13.80	0.00	0.06	133.90	
1:41:00	10:14:38	5.01	6.60	-5.44	8.30	0.00	0.12	133.20	
1:41:30	10:15:08	4.67	5.40	-5.16	15.20	0.00	0.01	133.00	
1:42:00	10:15:38	4.90	6.80	-5.32	12.80	0.00	0.00	132.60	
1:42:30	10:16:08	4.77	8.80	-5.53	13.00	0.00	0.20	132.50	
1:43:00	10:16:38	4.60	10.00	-4.93	17.10	0.00	0.00	132.30	
1:43:31	10:17:08	4.84	9.20	-5.31	8.90	0.00	0.01	131.90	
1:44:16	10:17:54	4.80	6.20	-5.37	9.00	0.00	0.06	131.20	
1:44:30	10:18:08	4.65	8.00	-5.12	13.10	0.00	0.11	131.00	
1:45:00	10:18:38	4.79	7.60	-5.32	14.20	0.00	0.10	131.20	
1:45:30	10:19:08	4.71	8.80	-5.33	11.10	0.00	0.01	131.50	
1:46:00	10:19:38	4.47	7.60	-5.08	16.80	0.00	0.15	131.10	
1:46:30	10:20:08	4.76	9.10	-5.35	8.60	0.00	0.11	130.90	
1:47:01	10:20:38	4.90	10.50	-5.39	13.10	0.00	0.01	130.80	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
1:47:31	10:21:08	4.65	8.10	-5.18	7.50	0.00	0.02	130.70	
1:48:01	10:21:38	4.60	8.00	-5.06	11.90	0.00	0.03	130.60	
1:48:31	10:22:08	4.68	8.00	-5.02	14.70	0.00	0.00	130.30	
1:49:01	10:22:38	4.52	8.20	-5.32	14.60	0.00	0.08	130.00	
1:49:31	10:23:08	4.55	8.70	-5.14	14.10	0.00	0.17	130.00	
1:50:01	10:23:38	4.80	12.40	-5.34	16.60	0.00	0.04	130.40	
1:50:31	10:24:08	4.60	5.30	-5.01	9.60	0.00	0.00	130.40	
1:51:01	10:24:38	4.51	7.60	-5.02	9.20	0.00	0.00	130.10	
1:51:31	10:25:08	4.75	6.70	-5.36	16.00	0.00	0.09	130.40	
1:52:01	10:25:38	4.64	6.40	-5.26	17.90	0.00	0.07	130.20	
1:52:31	10:26:08	4.35	7.80	-5.00	13.00	0.00	0.06	129.90	
1:53:01	10:26:38	4.74	8.80	-5.26	13.80	0.00	0.05	130.00	
1:53:31	10:27:08	4.46	8.60	-5.05	12.10	0.00	0.01	130.60	
1:54:01	10:27:38	4.60	10.60	-5.06	10.40	0.00	0.00	130.60	
1:54:31	10:28:08	4.68	10.00	-5.30	24.00	0.00	0.16	130.40	
1:55:01	10:28:38	4.59	6.30	-5.09	8.10	0.00	0.12	130.30	
1:55:31	10:29:08	4.29	7.20	-5.13	8.60	0.00	0.20	130.30	
1:56:01	10:29:38	4.76	11.80	-5.07	11.70	0.00	0.00	130.80	
1:56:31	10:30:08	4.38	7.50	-5.11	10.80	0.00	0.23	130.60	
1:57:01	10:30:38	4.27	6.90	-4.76	9.80	0.00	0.03	130.60	
1:57:31	10:31:08	4.63	9.00	-5.23	7.00	0.00	0.08	130.40	
1:58:02	10:31:39	4.69	10.10	-5.21	9.40	0.00	0.09	130.30	
1:58:31	10:32:08	4.44	7.50	-5.13	15.70	0.00	0.24	130.30	
1:59:01	10:32:38	4.42	7.40	-5.06	9.40	0.00	0.05	130.90	
1:59:31	10:33:08	4.68	10.40	-5.17	18.90	0.00	0.05	130.90	
2:00:01	10:33:38	4.38	6.20	-4.65	7.40	0.00	0.00	130.20	
2:00:31	10:34:08	4.42	7.40	-5.13	7.90	0.00	0.21	130.00	
2:01:01	10:34:38	4.35	7.50	-4.92	10.40	0.00	0.05	129.90	
2:01:31	10:35:08	4.50	6.70	-5.17	16.10	0.00	0.08	129.90	
2:02:01	10:35:38	4.32	7.90	-4.95	9.70	0.00	0.19	130.60	
2:02:31	10:36:08	4.51	8.80	-5.04	8.90	0.00	0.00	130.60	
2:03:01	10:36:38	4.43	6.80	-5.11	6.80	0.00	0.16	130.90	

VEGE Study Data

Cook's Country Store
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June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
2:03:31	10:37:08	4.46	6.00	-5.12	9.30	0.00	0.24	130.80	
2:04:01	10:37:38	4.27	9.60	-4.98	11.20	0.00	0.08	130.90	
2:04:31	10:38:08	4.52	7.50	-4.98	7.10	0.00	0.08	130.60	
2:05:01	10:38:38	4.62	8.90	-5.15	6.90	0.00	0.09	130.40	
2:05:31	10:39:08	4.59	10.00	-5.12	10.40	0.00	0.05	130.50	
2:06:01	10:39:38	4.44	7.30	-4.96	9.60	0.00	0.00	130.60	
2:06:31	10:40:08	4.56	6.20	-5.09	6.00	0.00	0.08	130.50	
2:07:01	10:40:38	4.52	6.50	-5.03	12.80	0.00	0.00	130.20	
2:07:31	10:41:08	4.54	9.30	-5.06	9.50	0.00	0.04	130.30	
2:08:01	10:41:38	4.74	7.10	-5.25	8.60	0.00	0.17	129.80	
2:08:31	10:42:08	4.47	8.80	-4.79	8.10	0.00	0.00	130.40	
2:09:01	10:42:38	4.53	10.10	-5.15	16.80	0.00	0.11	130.40	
2:09:31	10:43:08	4.52	6.40	-5.12	11.20	0.00	0.10	130.30	
2:10:01	10:43:38	4.43	8.10	-5.01	10.50	0.00	0.04	130.10	
2:10:31	10:44:08	4.43	7.20	-4.97	8.10	0.00	0.05	130.10	
2:11:01	10:44:38	4.57	6.80	-5.11	7.10	0.00	0.07	130.50	
2:11:31	10:45:08	4.42	8.90	-4.94	7.90	0.00	0.04	130.70	
2:12:01	10:45:38	4.38	7.40	-4.80	8.90	0.00	0.00	131.20	
2:12:31	10:46:08	4.56	6.10	-5.14	6.20	0.00	0.15	130.90	
2:13:01	10:46:38	4.62	9.30	-5.07	22.70	0.00	0.07	130.90	
2:13:31	10:47:08	4.32	8.40	-4.98	6.20	0.00	0.11	130.60	
2:14:01	10:47:38	4.43	11.20	-5.04	20.80	0.00	0.14	130.60	
2:14:31	10:48:08	4.65	9.30	-5.12	9.20	0.00	0.00	131.20	
2:15:01	10:48:38	4.52	6.90	-5.09	16.70	0.00	0.01	131.30	
2:15:31	10:49:08	4.32	7.30	-4.73	10.40	0.00	0.00	131.10	
2:16:01	10:49:38	4.63	11.80	-5.22	16.90	0.00	0.14	131.00	
2:16:31	10:50:08	4.50	6.70	-5.12	5.90	0.00	0.09	131.50	
2:17:01	10:50:38	4.45	10.20	-5.01	15.70	0.00	0.08	131.00	
2:17:31	10:51:08	4.52	9.70	-5.13	13.00	0.00	0.09	131.00	
2:18:01	10:51:38	4.63	7.80	-5.34	8.60	0.00	0.16	131.70	
2:18:31	10:52:08	4.44	10.10	-5.09	16.70	0.00	0.15	131.60	
2:19:01	10:52:38	4.49	9.70	-5.09	14.20	0.00	0.08	131.50	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
2:19:31	10:53:08	4.52	7.60	-5.05	12.20	0.00	0.05	131.40	
2:20:01	10:53:38	4.37	7.30	-4.98	5.70	0.00	0.15	131.50	
2:20:31	10:54:08	4.57	7.80	-4.89	11.20	0.00	0.20	131.70	
2:21:01	10:54:38	4.67	8.70	-5.26	7.90	0.00	0.06	131.00	
2:21:31	10:55:08	4.46	10.30	-4.95	10.60	0.00	0.00	131.50	
2:22:01	10:55:38	4.40	11.10	-4.98	19.60	0.00	0.13	131.90	
2:22:31	10:56:08	4.49	7.20	-4.82	11.50	0.00	0.00	131.60	
2:23:01	10:56:38	4.38	7.80	-4.78	13.80	0.00	0.00	131.50	
2:23:31	10:57:08	4.14	6.40	-4.77	13.50	0.00	0.15	131.80	
2:24:01	10:57:38	4.52	7.20	-4.86	13.00	0.00	0.00	131.70	
2:24:31	10:58:08	4.52	6.20	-4.88	5.60	0.00	0.00	132.00	
2:25:01	10:58:38	4.41	9.60	-4.99	16.10	0.00	0.09	131.60	
2:25:31	10:59:08	4.56	6.20	-5.09	11.60	0.00	0.09	131.70	
2:26:01	10:59:38	4.60	6.50	-5.09	10.40	0.00	0.04	131.70	
2:26:31	11:00:08	4.12	7.30	-4.67	9.90	0.00	0.00	131.70	
2:27:01	11:00:38	4.47	6.40	-5.02	11.60	0.00	0.05	131.80	
2:27:31	11:01:08	4.43	6.20	-4.98	12.90	0.00	0.00	131.90	
2:28:01	11:01:38	4.51	8.00	-5.16	13.10	0.00	0.10	131.60	
2:28:31	11:02:08	4.44	5.40	-4.81	6.90	0.00	0.00	131.50	
2:29:01	11:02:38	4.43	6.20	-4.84	8.00	0.00	0.00	131.60	
2:29:31	11:03:08	4.27	6.10	-4.95	13.00	0.00	0.01	132.00	
2:30:01	11:03:38	4.37	6.70	-4.92	6.20	0.00	0.02	132.00	
2:30:31	11:04:08	4.42	6.10	-5.09	9.00	0.00	0.11	131.90	
2:31:01	11:04:38	4.13	8.10	-4.76	15.40	0.00	0.14	132.00	
2:31:31	11:05:08	4.44	6.10	-5.10	9.20	0.00	0.05	131.80	
2:32:01	11:05:38	4.44	7.40	-4.71	13.40	0.00	0.00	131.70	
2:32:31	11:06:08	4.35	6.80	-5.07	10.00	0.00	0.11	132.00	
2:33:01	11:06:38	4.32	6.10	-5.04	5.60	0.00	0.23	132.20	
2:33:31	11:07:08	4.40	8.30	-5.06	8.50	0.00	0.12	131.70	
2:34:01	11:07:38	4.47	6.40	-5.01	9.90	0.00	0.04	131.60	
2:34:31	11:08:08	4.37	7.30	-5.04	8.10	0.00	0.10	131.70	
2:35:01	11:08:38	4.21	7.40	-4.81	14.80	0.00	0.01	131.60	

VEGE Study Data

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Robertsdale, PA

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		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
2:35:31	11:09:08	4.39	4.40	-4.97	9.80	0.00	0.19	132.10	
2:36:02	11:09:39	4.37	7.40	-4.71	7.40	0.00	0.00	132.00	
2:36:31	11:10:08	4.52	7.40	-4.99	8.20	0.00	0.06	132.10	
2:37:01	11:10:38	4.43	6.00	-4.88	10.50	0.00	0.00	132.30	
2:37:31	11:11:08	4.47	6.70	-5.12	10.40	0.00	0.10	132.30	
2:38:01	11:11:38	4.41	6.60	-4.87	6.00	0.00	0.11	133.00	
2:38:31	11:12:08	4.14	6.50	-4.69	13.90	0.00	0.00	132.80	
2:39:01	11:12:38	4.31	6.80	-5.18	12.90	0.00	0.23	132.60	
2:39:31	11:13:08	4.16	7.20	-4.76	11.10	0.00	0.10	132.60	
2:40:01	11:13:38	4.41	5.60	-5.05	10.30	0.00	0.07	132.80	
2:40:31	11:14:08	4.56	7.30	-4.98	8.80	0.00	0.00	132.40	
2:41:01	11:14:38	4.36	6.10	-4.99	13.10	0.00	0.00	132.50	
2:41:31	11:15:08	4.46	7.00	-4.96	9.70	0.00	0.10	132.70	
2:42:01	11:15:38	4.32	6.50	-4.73	9.30	0.00	0.00	132.20	
2:42:31	11:16:08	4.19	6.50	-4.95	10.40	0.00	0.14	132.00	
2:43:01	11:16:38	4.45	6.10	-5.00	9.30	0.00	0.10	132.30	
2:43:31	11:17:08	4.45	7.80	-5.01	14.00	0.00	0.00	132.50	
2:44:01	11:17:38	4.19	6.10	-4.84	13.10	0.00	0.00	132.80	
2:44:32	11:18:10	4.48	6.70	-5.11	14.00	0.00	0.09	132.80	
2:45:01	11:18:38	4.57	9.30	-5.24	8.70	0.00	0.22	132.70	
2:45:31	11:19:08	4.25	5.60	-4.99	10.30	0.00	0.27	132.30	
2:46:01	11:19:38	0.05	0.00	-0.71	0.00	0.00	0.04	129.40	End step 2 swith to claw blower
2:46:31	11:20:08	0.00	0.00	-0.57	0.00	0.00	0.04	123.10	
2:47:01	11:20:38	0.00	0.00	-0.54	0.00	0.00	0.04	119.40	
2:47:31	11:21:08	15.63	55.50	-16.41	75.80	0.00	0.47	111.20	
2:48:01	11:21:38	19.31	42.20	-19.98	53.50	0.00	0.31	101.20	
2:48:31	11:22:08	18.35	50.50	-19.05	60.10	0.00	0.36	98.30	
2:49:01	11:22:38	17.76	54.90	-18.43	61.60	0.00	0.31	97.80	
2:49:31	11:23:08	17.52	57.10	-18.20	63.90	0.00	0.34	100.40	
2:50:01	11:23:38	15.35	0.00	-15.75	0.00	0.00	0.02	103.70	
2:50:31	11:24:08	0.00	0.00	-0.55	0.00	0.00	0.04	103.20	
2:51:01	11:24:38	0.00	0.00	-0.54	0.00	0.00	0.04	101.80	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
2:51:31	11:25:08	0.00	0.00	-0.54	0.00	0.00	0.04	100.70	
2:52:01	11:25:38	0.00	0.00	-0.53	0.00	0.00	0.04	99.60	
2:52:31	11:26:08	0.00	0.00	-0.54	0.00	0.00	0.04	98.70	
2:53:01	11:26:38	0.00	0.00	-0.54	0.00	0.00	0.04	97.80	
2:53:31	11:27:08	0.00	0.00	-0.53	0.00	0.00	0.04	96.90	
2:54:01	11:27:38	0.00	0.00	-0.53	0.00	0.00	0.04	96.40	
2:54:31	11:28:08	0.00	0.00	-0.53	0.00	0.00	0.04	95.60	
2:55:01	11:28:39	6.26	92.00	-7.23	115.80	0.00	1.31	95.00	
2:55:31	11:29:09	21.02	34.70	-21.70	41.20	0.00	0.15	101.00	
2:56:01	11:29:39	23.07	27.20	-23.69	30.00	0.00	0.10	102.90	
2:56:31	11:30:09	23.00	28.20	-23.62	30.70	0.00	0.11	106.30	
2:57:01	11:30:39	22.80	28.60	-23.44	30.60	0.00	0.09	108.40	
2:57:31	11:31:08	22.60	29.50	-23.26	31.70	0.00	0.16	109.60	
2:58:01	11:31:39	22.54	29.90	-23.20	31.90	0.00	0.16	110.40	
2:58:31	11:32:09	22.49	30.30	-23.17	32.40	0.00	0.14	110.90	
2:59:01	11:32:39	22.49	29.80	-23.16	32.00	0.00	0.12	111.60	
2:59:31	11:33:09	22.41	30.80	-23.09	32.70	0.00	0.15	112.20	
3:00:01	11:33:39	22.33	30.50	-23.01	33.00	0.00	0.18	113.00	
3:00:31	11:34:09	22.24	31.20	-22.90	33.10	0.00	0.17	113.80	
3:01:01	11:34:38	22.30	31.00	-22.96	33.00	0.00	0.15	115.10	
3:01:31	11:35:08	22.47	30.30	-23.15	32.70	0.00	0.09	116.10	
3:02:01	11:35:38	22.57	0.00	-23.27	31.20	0.00	0.14	117.20	
3:02:31	11:36:08	22.32	0.00	-23.01	32.70	0.00	0.15	118.90	
3:03:01	11:36:38	21.75	0.00	-22.48	35.50	0.00	0.19	120.60	
3:03:31	11:37:08	21.15	0.00	-21.85	39.80	0.00	0.14	122.00	
3:04:01	11:37:38	15.81	0.00	-16.24	0.00	0.00	0.00	123.00	
3:04:31	11:38:08	0.00	0.00	-0.56	0.00	0.00	0.03	119.60	
3:05:01	11:38:38	0.00	0.00	-0.56	0.00	0.00	0.04	117.60	
3:05:31	11:39:08	0.00	0.00	-0.55	0.00	0.00	0.04	115.70	
3:06:01	11:39:38	0.00	0.00	-0.54	0.00	0.00	0.04	114.10	
3:06:31	11:40:08	0.00	0.00	-0.52	0.00	0.00	0.04	112.60	
3:07:01	11:40:38	0.00	0.00	-0.52	0.00	0.00	0.04	111.10	

VEGE Study Data

Cook's Country Store
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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
3:07:31	11:41:08	0.00	0.00	-0.48	0.00	0.00	0.04	109.80	
3:08:01	11:41:38	0.00	0.00	-0.50	0.00	0.00	0.04	108.70	
3:08:31	11:42:08	0.00	0.00	-0.46	0.00	0.00	0.04	107.60	
3:09:01	11:42:38	0.00	0.00	-0.44	0.00	0.00	0.04	106.70	
3:09:31	11:43:08	0.00	0.00	-0.42	0.00	0.00	0.04	105.70	
3:10:01	11:43:38	7.94	412.00	-8.67	110.90	29.30	1.08	105.30	
3:10:31	11:44:08	9.89	162.10	-10.42	106.90	75.30	0.91	115.00	
3:11:01	11:44:38	10.24	4.30	-10.71	104.50	108.70	0.88	125.60	
3:11:31	11:45:08	7.64	19.00	-8.21	117.10	100.40	1.15	135.60	
3:12:01	11:45:38	7.50	18.30	-8.30	118.60	98.90	1.31	141.70	
3:12:31	11:46:08	7.53	17.70	-8.25	119.40	97.90	1.21	144.60	
3:13:01	11:46:38	7.48	16.00	-8.08	118.00	99.90	1.12	146.80	
3:13:31	11:47:08	7.47	18.90	-8.13	118.30	99.90	1.12	148.20	
3:14:01	11:47:38	7.51	18.00	-8.12	119.20	96.90	1.12	149.40	
3:14:31	11:48:08	7.50	16.20	-8.25	119.10	97.90	1.30	150.20	
3:15:01	11:48:38	7.48	16.70	-8.23	119.70	99.20	1.30	150.90	
3:15:31	11:49:08	7.50	18.00	-8.20	117.80	97.40	1.30	151.40	
3:16:01	11:49:38	7.47	11.70	-8.12	117.20	98.50	1.18	151.70	
3:16:31	11:50:08	7.50	13.10	-8.11	118.90	100.00	1.14	152.20	
3:17:01	11:50:39	7.50	11.90	-8.24	118.50	98.90	1.19	152.50	
3:17:31	11:51:09	7.47	9.20	-8.25	117.80	98.70	1.29	152.90	
3:18:01	11:51:39	7.50	12.50	-8.13	118.40	101.80	1.11	153.10	
3:18:31	11:52:09	7.50	14.80	-8.10	119.40	97.80	1.09	153.10	
3:19:01	11:52:39	7.49	19.40	-8.24	119.60	98.40	1.30	153.50	
3:19:31	11:53:09	7.52	18.10	-8.13	118.50	97.60	1.13	153.60	
3:20:01	11:53:39	7.47	18.10	-8.20	117.60	99.10	1.22	153.80	
3:20:31	11:54:09	7.50	18.20	-8.11	118.20	99.90	1.16	154.00	
3:21:01	11:54:39	7.48	18.10	-8.08	118.30	100.50	1.09	154.30	
3:21:31	11:55:09	7.46	18.00	-8.16	118.00	96.20	1.13	154.50	
3:22:01	11:55:39	7.49	19.60	-8.17	120.30	99.30	1.25	154.50	
3:22:31	11:56:09	7.48	19.00	-8.02	118.00	95.20	1.07	154.70	
3:23:01	11:56:39	7.47	18.40	-8.14	118.60	97.40	1.22	154.70	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
3:23:31	11:57:09	7.48	19.10	-8.10	117.30	100.00	1.12	154.90	
3:24:01	11:57:39	7.48	18.30	-8.10	117.30	98.30	1.06	155.00	
3:24:31	11:58:09	7.48	18.70	-8.14	118.60	97.20	1.15	155.00	
3:25:01	11:58:39	7.51	18.10	-8.20	117.80	95.10	1.26	155.20	
3:25:31	11:59:09	7.45	19.00	-8.13	118.10	97.70	1.25	155.20	
3:26:01	11:59:39	7.47	20.00	-8.22	119.60	96.80	1.27	155.20	
3:26:31	12:00:09	7.48	18.20	-8.18	119.10	101.20	1.15	155.20	
3:27:01	12:00:39	13.38	203.80	-14.22	87.00	0.00	0.59	155.30	
3:27:31	12:01:09	8.32	7.10	-8.98	114.50	106.60	1.22	153.70	
3:28:01	12:01:39	6.95	20.10	-7.70	119.80	101.40	1.33	154.20	
3:28:31	12:02:09	6.89	21.40	-7.65	121.50	101.10	1.34	155.60	
3:29:01	12:02:39	6.87	20.80	-7.64	120.40	99.60	1.34	156.30	
3:29:31	12:03:09	6.84	20.50	-7.63	120.30	101.20	1.31	156.40	
3:30:02	12:03:39	6.88	21.40	-7.58	123.00	102.40	1.32	156.40	
3:30:31	12:04:09	6.87	19.60	-7.68	119.40	100.10	1.30	156.40	
3:31:01	12:04:39	6.82	17.70	-7.40	119.80	101.80	1.14	156.50	
3:31:31	12:05:09	6.82	17.00	-7.58	119.70	102.40	1.34	156.40	
3:32:01	12:05:39	6.84	15.60	-7.52	120.80	103.40	1.28	156.50	
3:32:31	12:06:09	6.82	15.60	-7.58	122.10	103.20	1.32	156.50	
3:33:01	12:06:39	6.84	16.20	-7.46	120.90	101.70	1.19	156.40	
3:33:31	12:07:09	6.80	17.00	-7.57	120.30	100.50	1.28	156.40	
3:34:01	12:07:39	6.79	17.10	-7.48	120.40	102.50	1.31	156.40	
3:34:31	12:08:09	15.26	57.70	-16.03	77.60	0.00	0.42	156.40	
3:35:01	12:08:39	8.87	20.80	-9.50	111.40	88.40	0.95	154.70	
3:35:31	12:09:09	8.15	18.40	-8.82	115.50	93.50	1.08	155.50	
3:36:01	12:09:39	8.08	20.20	-8.81	114.60	91.50	1.13	156.40	
3:36:31	12:10:09	8.05	18.20	-8.65	113.40	93.40	1.02	156.90	
3:37:01	12:10:39	8.08	20.00	-8.74	115.80	95.40	1.11	157.00	
3:37:31	12:11:09	8.08	18.80	-8.74	114.70	94.30	1.15	157.10	
3:38:01	12:11:39	8.05	18.90	-8.75	114.00	93.80	1.07	157.30	
3:38:31	12:12:09	8.08	20.20	-8.79	114.70	89.30	1.22	157.40	
3:39:01	12:12:39	8.05	18.00	-8.63	112.30	90.70	1.12	157.40	

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
3:39:31	12:13:09	8.05	20.20	-8.82	115.90	89.10	1.21	157.50	
3:40:01	12:13:39	8.05	18.90	-8.69	114.20	91.10	1.02	157.60	
3:40:31	12:14:09	8.04	18.40	-8.72	113.20	91.20	1.19	157.70	
3:41:01	12:14:39	8.05	18.90	-8.72	112.00	90.40	1.07	157.80	
3:41:31	12:15:09	8.00	18.30	-8.73	114.20	94.90	1.23	157.60	
3:42:01	12:15:39	8.02	18.90	-8.67	116.90	91.20	1.17	157.80	
3:42:31	12:16:09	8.02	18.00	-8.73	112.50	91.60	1.20	158.00	
3:43:01	12:16:39	8.04	18.90	-8.82	114.90	90.90	1.15	158.10	
3:43:31	12:17:09	8.05	19.00	-8.70	114.60	93.50	1.13	158.00	
3:44:01	12:17:39	8.01	17.70	-8.73	115.10	93.00	1.06	158.20	
3:44:31	12:18:09	8.02	19.60	-8.73	115.20	91.50	1.06	158.10	
3:45:01	12:18:39	8.03	18.70	-8.63	114.50	91.70	1.06	158.30	
3:45:31	12:19:09	8.00	19.10	-8.67	114.00	93.80	1.09	158.30	
3:46:01	12:19:39	8.05	19.70	-8.65	114.70	91.70	1.02	158.40	
3:46:31	12:20:09	8.00	18.40	-8.65	114.60	93.10	1.01	158.50	
3:47:01	12:20:39	8.02	20.00	-8.77	114.80	90.60	1.22	158.50	
3:47:31	12:21:09	8.02	20.20	-8.73	114.50	91.40	1.19	158.50	
3:48:01	12:21:39	8.00	19.40	-8.69	114.10	89.90	1.14	158.60	
3:48:31	12:22:09	8.02	19.90	-8.75	115.90	89.50	1.09	158.60	
3:49:01	12:22:39	8.05	19.60	-8.75	113.50	91.50	1.21	158.50	
3:49:31	12:23:09	7.94	20.10	-8.70	115.10	92.40	1.22	158.60	
3:50:01	12:23:39	8.04	19.40	-8.68	114.20	91.10	1.17	158.60	
3:50:31	12:24:09	7.98	19.30	-8.61	115.20	90.40	1.12	158.60	
3:51:01	12:24:39	8.01	19.20	-8.70	113.40	92.40	1.21	158.70	
3:51:31	12:25:09	8.00	20.20	-8.71	115.80	93.70	1.13	158.60	
3:52:01	12:25:39	7.99	18.90	-8.65	116.10	93.20	1.06	158.80	
3:52:31	12:26:09	8.00	20.10	-8.69	115.80	92.80	1.07	158.60	
3:53:01	12:26:39	7.99	19.30	-8.71	113.30	92.90	1.17	158.60	
3:53:31	12:27:09	7.91	18.90	-8.56	116.00	92.30	1.02	158.80	
3:54:01	12:27:39	8.00	20.20	-8.68	116.10	90.60	1.09	158.60	
3:54:31	12:28:09	7.98	18.80	-8.65	114.10	91.10	1.06	158.60	
3:55:01	12:28:39	7.99	20.50	-8.59	115.20	92.80	1.04	158.70	

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
3:55:31	12:29:09	7.99	20.30	-8.58	114.80	91.80	1.06	158.70	
3:56:01	12:29:39	7.98	19.30	-8.67	115.20	91.50	1.19	158.70	
3:56:31	12:30:09	8.02	20.70	-8.63	113.30	92.90	1.02	158.90	
3:57:01	12:30:39	7.99	20.30	-8.73	115.40	91.70	1.21	158.90	
3:57:31	12:31:09	7.97	20.50	-8.71	115.20	90.30	1.07	158.90	
3:58:01	12:31:39	8.00	20.10	-8.61	114.60	91.00	1.03	158.90	
3:58:31	12:32:09	7.98	18.90	-8.61	114.10	94.60	1.03	158.90	
3:59:01	12:32:39	8.00	20.90	-8.73	115.00	92.60	1.17	158.80	
3:59:31	12:33:09	8.02	19.90	-8.63	113.40	93.60	1.04	158.90	
4:00:01	12:33:39	7.99	19.70	-8.75	114.60	93.40	1.22	158.80	
4:00:31	12:34:09	8.02	20.50	-8.75	116.00	94.00	1.19	158.80	
4:01:01	12:34:39	7.97	21.40	-8.69	116.00	93.00	1.08	158.90	
4:01:31	12:35:09	7.99	20.30	-8.63	114.60	92.50	1.20	158.90	
4:02:01	12:35:39	8.00	19.70	-8.76	114.70	92.30	1.21	158.60	
4:02:31	12:36:09	7.97	18.90	-8.63	114.20	91.20	1.08	158.60	
4:03:01	12:36:39	8.02	20.20	-8.67	115.10	90.60	1.12	158.90	
4:03:31	12:37:09	8.00	19.40	-8.57	114.00	93.10	1.03	158.90	
4:04:01	12:37:39	7.96	20.00	-8.65	114.20	94.90	1.16	158.70	
4:04:31	12:38:09	13.72	63.80	-14.59	86.10	0.00	0.60	158.60	
4:05:01	12:38:39	10.22	21.30	-10.82	103.10	76.30	0.81	157.50	
4:05:31	12:39:09	10.00	23.30	-10.63	105.00	78.70	0.88	158.00	
4:06:01	12:39:39	9.89	22.80	-10.59	104.60	76.20	1.04	158.70	
4:06:31	12:40:09	9.92	22.80	-10.65	105.80	75.30	1.04	159.10	
4:07:01	12:40:39	9.97	22.50	-10.67	104.90	76.70	0.98	159.30	
4:07:31	12:41:09	9.91	22.30	-10.63	105.70	79.40	1.05	159.60	
4:08:01	12:41:39	9.92	23.00	-10.55	106.20	78.10	0.91	159.80	
4:08:31	12:42:09	9.89	22.10	-10.55	104.80	76.40	0.89	160.00	
4:09:01	12:42:39	9.91	22.70	-10.54	105.40	74.80	0.95	160.10	
4:09:31	12:43:09	9.93	22.10	-10.57	103.70	78.40	0.90	160.20	
4:10:01	12:43:39	9.89	22.60	-10.53	105.70	77.30	0.91	160.50	
4:10:31	12:44:09	9.94	22.70	-10.58	103.80	78.40	0.92	160.50	
4:11:01	12:44:39	9.91	22.70	-10.49	103.50	76.20	0.84	160.80	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
4:11:31	12:45:09	9.89	22.60	-10.63	104.60	78.50	1.04	160.80	
4:12:01	12:45:39	9.89	22.70	-10.57	104.20	77.20	0.91	161.00	
4:12:31	12:46:09	9.86	22.50	-10.59	104.90	77.20	1.05	161.10	
4:13:01	12:46:39	9.89	23.40	-10.57	105.50	76.90	0.96	161.10	
4:13:31	12:47:09	9.91	22.50	-10.61	104.30	76.30	0.91	161.10	
4:14:01	12:47:39	9.88	23.20	-10.49	103.50	75.30	0.84	161.10	
4:14:31	12:48:09	9.89	23.20	-10.53	103.20	76.20	0.88	161.30	
4:15:01	12:48:39	9.86	22.60	-10.47	104.10	78.20	0.88	161.30	
4:15:31	12:49:09	9.89	23.30	-10.60	104.20	80.10	0.98	161.40	
4:16:01	12:49:39	9.89	22.90	-10.49	104.80	76.30	0.88	161.30	
4:16:31	12:50:09	9.86	22.00	-10.46	106.80	79.70	0.91	161.60	
4:17:01	12:50:39	9.88	23.20	-10.60	104.60	80.70	0.95	161.70	
4:17:31	12:51:09	9.84	22.60	-10.52	105.00	77.10	0.88	161.60	
4:18:01	12:51:39	9.89	23.60	-10.57	106.10	77.30	1.04	161.70	
4:18:31	12:52:09	9.86	23.10	-10.51	104.60	77.50	1.01	161.80	
4:19:01	12:52:39	9.84	23.90	-10.60	106.90	77.30	1.04	161.90	
4:19:31	12:53:09	9.89	23.30	-10.48	107.00	78.10	0.84	161.80	
4:20:01	12:53:39	9.86	23.20	-10.45	105.50	78.40	0.86	161.90	
4:20:31	12:54:09	9.89	23.70	-10.52	107.40	78.60	0.97	161.90	
4:21:02	12:54:39	9.85	23.20	-10.51	104.70	79.00	1.02	161.90	
4:21:31	12:55:09	9.85	23.20	-10.47	104.60	77.30	0.98	161.90	
4:22:01	12:55:39	9.88	23.30	-10.57	104.70	77.60	0.91	161.90	
4:22:31	12:56:09	9.86	23.30	-10.52	103.20	79.00	1.01	162.10	
4:23:01	12:56:39	9.86	23.70	-10.48	106.80	79.50	0.90	162.10	
4:23:31	12:57:09	9.85	23.70	-10.49	106.60	77.70	0.84	162.10	
4:24:01	12:57:39	9.83	23.00	-10.47	105.50	78.80	0.86	162.10	
4:24:31	12:58:09	9.86	23.40	-10.55	106.10	77.00	0.87	162.10	
4:25:01	12:58:39	9.87	23.20	-10.57	105.60	77.60	1.05	162.20	
4:25:31	12:59:09	9.83	23.00	-10.45	106.00	78.80	0.84	162.00	
4:26:01	12:59:39	9.87	23.90	-10.58	106.90	77.70	1.04	162.20	
4:26:31	13:00:09	9.86	23.10	-10.47	105.80	78.60	0.84	162.10	
4:27:01	13:00:39	9.80	23.80	-10.43	106.50	78.00	0.85	162.10	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
4:27:31	13:01:09	9.86	23.40	-10.44	105.80	77.60	0.85	162.10	
4:28:01	13:01:39	9.82	23.00	-10.54	107.00	83.10	1.04	162.10	
4:28:31	13:02:09	9.83	24.50	-10.46	106.00	80.90	0.96	162.10	
4:29:01	13:02:39	9.86	23.40	-10.51	105.00	78.20	0.95	162.10	
4:29:31	13:03:09	9.82	23.20	-10.51	106.20	79.80	1.04	162.40	
4:30:01	13:03:39	9.86	24.00	-10.57	107.00	78.30	1.06	162.30	
4:30:31	13:04:09	9.85	23.30	-10.57	105.80	75.00	1.02	162.10	
4:31:01	13:04:39	9.85	23.50	-10.58	106.10	79.60	1.05	162.30	
4:31:31	13:05:09	9.81	23.60	-10.54	105.80	75.20	1.04	162.40	
4:32:01	13:05:39	9.81	24.00	-10.60	105.00	77.60	1.02	162.50	
4:32:31	13:06:09	9.82	24.50	-10.43	105.80	76.30	0.86	162.60	
4:33:01	13:06:39	9.78	23.70	-10.46	105.90	78.70	0.91	162.60	
4:33:31	13:07:09	9.83	23.90	-10.56	107.90	78.00	1.05	162.60	
4:34:01	13:07:39	9.82	23.10	-10.43	105.30	73.80	0.93	162.70	
4:34:31	13:08:09	9.81	23.30	-10.52	106.20	77.40	0.95	162.80	
4:35:01	13:08:39	9.83	23.20	-10.46	105.00	76.80	0.86	162.70	
4:35:31	13:09:09	9.81	22.60	-10.43	105.50	78.20	0.89	162.70	
4:36:01	13:09:39	9.82	23.20	-10.43	105.40	78.70	0.86	162.90	
4:36:31	13:10:09	9.83	23.10	-10.57	106.10	78.20	1.05	162.80	
4:37:01	13:10:39	9.81	23.00	-10.50	104.70	76.40	0.92	162.80	
4:37:31	13:11:09	9.83	23.60	-10.49	106.20	76.80	0.86	162.80	
4:38:01	13:11:39	9.83	23.50	-10.52	105.90	76.90	0.88	162.70	
4:38:31	13:12:09	17.81	52.00	-18.59	61.10	0.00	0.23	162.70	
4:39:01	13:12:39	8.54	16.90	-9.22	112.80	93.90	0.89	161.60	
4:39:31	13:13:09	8.09	21.10	-8.89	114.30	90.30	1.11	162.60	
4:40:01	13:13:39	8.07	22.00	-8.79	114.50	90.20	1.16	163.00	
4:40:31	13:14:09	8.07	22.00	-8.76	114.50	91.20	0.96	163.20	
4:41:01	13:14:39	8.02	22.10	-8.83	115.50	91.70	1.11	163.20	
4:41:31	13:15:09	8.08	22.10	-8.67	114.60	90.10	0.98	162.90	
4:42:01	13:15:39	8.04	21.50	-8.79	114.10	90.40	1.14	162.70	
4:42:31	13:16:09	8.05	22.50	-8.84	115.60	91.60	1.16	162.60	
4:43:01	13:16:39	8.05	22.30	-8.73	112.70	90.00	0.95	162.50	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
4:43:31	13:17:09	8.03	22.50	-8.84	116.50	91.50	1.15	162.30	
4:44:01	13:17:39	8.06	22.10	-8.83	114.50	90.70	1.13	162.20	
4:44:31	13:18:09	8.06	21.30	-8.76	115.10	91.60	0.94	161.90	
4:45:05	13:18:42	8.04	21.70	-8.76	115.60	87.40	0.96	161.90	
4:45:31	13:19:09	8.05	21.40	-8.78	114.20	93.60	1.01	161.80	
4:46:01	13:19:39	8.03	21.20	-8.79	114.00	89.30	1.12	161.40	
4:46:31	13:20:09	8.07	21.30	-8.70	116.20	88.10	0.96	161.50	
4:47:01	13:20:39	8.05	21.50	-8.73	112.10	89.80	1.10	161.30	
4:47:31	13:21:09	8.05	21.50	-8.70	115.20	90.70	1.07	161.50	
4:48:01	13:21:39	8.06	20.60	-8.77	114.40	89.80	1.13	161.30	
4:48:31	13:22:09	8.05	21.30	-8.82	113.30	88.20	1.10	161.30	
4:49:01	13:22:39	8.05	21.40	-8.81	115.80	90.60	1.06	161.40	
4:49:31	13:23:09	8.05	21.40	-8.71	112.10	89.40	1.04	161.30	
4:50:01	13:23:39	8.04	21.40	-8.71	114.30	92.20	1.12	161.40	
4:50:31	13:24:09	8.05	21.70	-8.71	114.10	89.90	0.94	161.30	
4:51:01	13:24:39	8.04	21.50	-8.64	113.50	89.40	0.96	161.30	
4:51:32	13:25:09	8.02	22.00	-8.75	114.10	90.40	1.06	161.00	
4:52:01	13:25:39	8.05	20.90	-8.84	113.40	88.50	1.13	161.00	
4:52:31	13:26:09	8.05	21.20	-8.79	113.50	84.40	1.15	161.10	
4:53:01	13:26:39	8.05	22.00	-8.68	114.20	86.80	0.95	161.20	
4:53:31	13:27:09	8.05	21.40	-8.80	114.20	88.00	1.00	161.00	
4:54:01	13:27:39	8.03	21.20	-8.88	115.50	89.10	1.15	161.30	
4:54:31	13:28:09	8.07	21.30	-8.81	114.00	91.00	0.95	161.30	
4:55:01	13:28:39	7.97	19.10	-8.73	112.80	88.40	1.07	161.20	
4:55:31	13:29:09	8.05	21.40	-8.84	113.50	88.60	1.11	161.00	
4:56:01	13:29:39	8.05	21.30	-8.71	113.00	91.20	0.93	161.30	
4:56:31	13:30:09	8.08	21.50	-8.76	113.40	88.90	1.11	161.20	
4:57:01	13:30:39	8.03	21.50	-8.66	112.60	88.30	0.95	161.10	
4:57:31	13:31:09	8.04	21.30	-8.82	113.80	94.20	1.14	161.20	
4:58:01	13:31:39	8.03	20.60	-8.76	114.00	92.70	1.02	161.00	
4:58:31	13:32:09	8.05	21.40	-8.71	113.10	88.90	1.04	161.30	
4:59:01	13:32:39	8.07	21.50	-8.79	113.50	85.50	1.07	161.30	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
4:59:31	13:33:09	8.03	21.10	-8.79	113.10	86.90	1.11	161.30	
5:00:01	13:33:39	8.02	20.90	-8.70	113.30	86.80	1.02	161.20	
5:00:31	13:34:09	8.04	21.30	-8.75	114.00	87.20	1.04	161.20	
5:01:01	13:34:39	8.01	20.70	-8.69	113.00	90.30	0.94	161.30	
5:01:31	13:35:09	8.05	22.00	-8.83	114.40	88.10	1.12	161.50	
5:02:02	13:35:39	8.00	21.20	-8.79	110.50	90.10	1.12	161.50	
5:02:32	13:36:09	7.97	20.20	-8.73	112.30	88.80	1.09	161.60	
5:03:02	13:36:39	8.03	21.40	-8.69	113.00	90.60	0.94	161.60	
5:03:31	13:37:09	8.03	21.40	-8.82	112.90	91.20	1.07	161.60	
5:04:01	13:37:39	8.03	22.20	-8.80	115.00	90.00	1.13	161.40	
5:04:32	13:38:10	8.02	21.80	-8.68	113.50	91.30	0.93	161.60	
5:05:01	13:38:39	8.01	21.70	-8.80	114.50	89.90	1.11	161.60	
5:05:32	13:39:09	8.05	21.80	-8.83	113.80	89.20	1.11	161.40	
5:06:02	13:39:39	8.00	21.30	-8.76	112.70	89.30	1.12	161.30	
5:06:32	13:40:09	8.01	22.10	-8.69	115.50	89.20	0.96	161.60	
5:07:01	13:40:39	8.02	21.80	-8.65	114.10	90.00	0.96	161.60	
5:07:31	13:41:09	8.02	21.50	-8.79	113.50	90.30	1.13	161.30	
5:08:01	13:41:39	8.05	21.40	-8.67	114.20	88.10	0.99	161.50	
5:08:32	13:42:09	8.02	21.40	-8.81	113.50	89.10	1.12	161.60	
5:09:02	13:42:39	8.02	22.20	-8.73	112.90	88.00	1.13	161.40	
5:09:32	13:43:09	8.00	22.10	-8.72	113.50	90.50	1.04	161.30	
5:10:01	13:43:39	8.02	21.30	-8.79	114.60	90.50	1.12	161.50	
5:10:31	13:44:09	8.06	21.40	-8.72	114.00	88.90	0.97	161.40	
5:11:01	13:44:39	8.03	20.90	-8.79	113.20	86.90	1.15	161.30	
5:11:31	13:45:09	8.02	21.80	-8.79	114.20	88.00	1.02	161.60	
5:12:02	13:45:39	8.04	21.40	-8.81	112.90	88.70	1.10	161.60	
5:12:32	13:46:09	8.02	21.90	-8.71	113.50	87.60	0.97	161.60	
5:13:02	13:46:39	8.02	21.50	-8.76	113.50	88.80	1.15	161.70	
5:13:31	13:47:09	8.01	20.80	-8.71	113.30	92.20	0.94	161.70	
5:14:01	13:47:39	8.00	22.00	-8.78	114.60	88.00	1.14	161.70	
5:14:31	13:48:09	8.02	21.10	-8.73	112.00	89.80	0.94	161.70	
5:15:02	13:48:39	8.02	21.80	-8.76	113.60	88.80	1.12	161.70	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
5:15:32	13:49:09	8.02	21.80	-8.82	113.30	87.90	1.15	161.70	
5:16:02	13:49:39	8.01	21.10	-8.68	114.70	88.10	1.06	161.90	
5:16:32	13:50:09	8.03	21.90	-8.81	114.20	91.90	1.16	161.90	
5:17:02	13:50:39	8.02	21.90	-8.80	114.60	88.60	1.12	161.80	
5:17:31	13:51:09	7.97	22.10	-8.75	113.90	92.00	1.13	161.90	
5:18:01	13:51:39	8.05	21.90	-8.74	113.30	88.10	1.02	161.60	
5:18:32	13:52:09	8.01	22.10	-8.67	112.70	92.70	0.93	161.80	
5:19:02	13:52:39	7.99	22.30	-8.70	114.90	91.30	1.00	161.60	
5:19:32	13:53:09	8.02	21.90	-8.73	114.10	88.80	0.95	161.90	
5:20:02	13:53:39	8.01	22.00	-8.65	114.20	89.90	1.08	161.90	
5:20:32	13:54:09	8.04	21.90	-8.65	114.10	88.00	0.94	161.60	
5:21:02	13:54:39	8.00	21.50	-8.63	112.80	88.10	0.92	162.00	
5:21:32	13:55:09	8.05	22.40	-8.73	113.40	86.90	1.00	161.90	
5:22:02	13:55:39	8.04	21.40	-8.80	113.30	91.20	1.09	162.00	
5:22:32	13:56:09	7.99	21.40	-8.60	113.40	88.20	0.93	161.90	
5:23:02	13:56:39	8.02	21.90	-8.68	113.40	90.60	1.05	162.10	
5:23:32	13:57:09	8.00	21.50	-8.80	114.20	88.40	1.14	162.20	
5:24:02	13:57:39	8.02	21.40	-8.77	113.40	87.90	1.00	162.10	
5:24:32	13:58:09	8.03	21.80	-8.71	114.70	90.50	0.94	162.10	
5:25:02	13:58:39	7.98	21.20	-8.60	113.30	90.00	0.93	162.00	
5:25:32	13:59:09	8.02	22.50	-8.63	114.50	86.30	1.00	161.90	
5:26:02	13:59:39	8.04	21.70	-8.84	113.30	89.00	1.12	162.10	
5:26:32	14:00:09	8.00	21.30	-8.61	114.30	90.70	0.94	162.10	
5:27:02	14:00:39	8.02	21.90	-8.78	114.00	89.40	1.05	162.40	
5:27:32	14:01:09	12.99	71.70	-13.85	90.50	0.00	0.56	162.40	
5:28:02	14:01:39	20.14	40.20	-20.93	45.60	0.00	0.20	160.40	
5:28:32	14:02:09	12.12	14.90	-12.71	93.70	75.10	0.65	157.70	
5:29:02	14:02:39	9.51	21.30	-10.13	105.60	80.50	0.86	159.40	
5:29:32	14:03:09	9.23	23.70	-9.97	107.10	78.20	1.12	162.30	
5:30:02	14:03:39	9.20	23.70	-9.90	107.20	80.90	0.92	163.50	
5:30:32	14:04:09	9.18	24.00	-9.94	108.60	79.70	1.10	164.30	
5:31:02	14:04:39	9.18	23.60	-9.84	108.00	81.10	0.90	164.50	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
5:31:32	14:05:09	9.17	23.90	-9.86	107.20	77.50	0.90	164.60	
5:32:02	14:05:39	9.19	25.00	-9.89	108.50	77.20	1.01	164.70	
5:32:32	14:06:09	9.19	24.20	-9.83	108.50	81.80	0.90	164.60	
5:33:02	14:06:39	9.12	23.70	-9.85	107.70	80.50	1.04	164.50	
5:33:32	14:07:09	9.19	25.20	-9.98	108.60	81.10	1.08	164.60	
5:34:02	14:07:39	9.15	23.90	-9.91	106.60	81.10	1.09	164.50	
5:34:32	14:08:09	9.19	24.40	-9.93	109.10	78.60	1.12	164.40	
5:35:02	14:08:39	9.15	24.50	-9.89	109.70	79.70	1.07	164.60	
5:35:32	14:09:09	9.16	24.60	-9.81	107.30	80.70	0.90	164.60	
5:36:02	14:09:39	9.19	24.20	-9.94	107.30	79.90	1.12	164.30	
5:36:32	14:10:09	9.16	23.90	-9.89	108.60	80.70	1.10	164.20	
5:37:02	14:10:39	9.18	24.40	-9.88	109.30	78.20	0.73	164.30	
5:37:32	14:11:09	9.19	24.40	-9.84	107.40	78.00	0.95	164.30	
5:38:02	14:11:39	9.15	24.10	-9.91	108.40	80.00	1.11	164.20	
5:38:32	14:12:09	9.18	23.80	-9.87	108.00	80.50	0.97	164.20	
5:39:02	14:12:39	9.17	23.70	-9.95	108.70	78.10	1.10	164.20	
5:39:32	14:13:09	9.18	24.00	-9.92	109.60	81.20	0.91	164.30	
5:40:02	14:13:39	9.12	24.30	-9.91	106.70	80.00	1.07	164.40	
5:40:32	14:14:09	9.09	25.20	-9.80	108.30	80.60	1.07	164.30	
5:41:02	14:14:39	9.18	23.80	-9.82	107.30	81.10	1.02	164.30	
5:41:32	14:15:09	9.15	24.00	-9.89	107.60	80.60	0.95	164.40	
5:42:02	14:15:39	9.17	25.80	-9.94	107.20	80.50	1.10	164.20	
5:42:32	14:16:09	9.17	24.30	-9.90	108.30	80.50	1.06	164.50	
5:43:02	14:16:39	9.17	25.10	-9.89	109.40	79.60	0.98	164.40	
5:43:32	14:17:09	9.19	24.00	-9.87	109.20	80.70	1.06	164.40	
5:44:02	14:17:39	9.15	23.90	-9.88	107.10	79.20	0.93	164.40	
5:44:32	14:18:09	9.19	24.10	-9.85	108.60	82.10	0.96	164.40	
5:45:02	14:18:39	9.19	23.80	-9.96	106.90	80.40	0.98	164.40	
5:45:32	14:19:09	9.14	24.40	-9.81	108.60	82.60	0.92	164.30	
5:46:02	14:19:39	9.19	24.00	-9.93	108.00	76.90	0.96	164.40	
5:46:32	14:20:09	9.15	23.60	-9.91	108.50	79.20	1.09	164.30	
5:47:02	14:20:39	9.18	24.00	-9.89	107.30	80.50	0.92	164.30	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
5:47:32	14:21:09	9.18	23.70	-9.89	110.50	78.10	0.95	164.50	
5:48:02	14:21:39	9.17	24.30	-9.79	108.10	76.70	0.93	164.60	
5:48:32	14:22:09	9.16	24.60	-9.89	106.30	80.00	1.07	164.60	
5:49:02	14:22:39	5.98	0.00	-6.42	0.00	0.00	0.01	164.60	END SVE until sampling canisters available
5:49:32	14:23:09	0.00	0.00	-0.55	0.00	0.00	0.00	161.00	
5:50:02	14:23:39	0.00	0.00	-0.54	0.00	0.00	0.01	157.80	
5:50:32	14:24:09	0.00	0.00	-0.53	0.00	0.00	0.01	153.80	
5:51:02	14:24:39	0.00	0.00	-0.54	0.00	0.00	0.01	151.10	
5:51:32	14:25:09	0.00	0.00	-0.52	0.00	0.00	0.01	148.40	
5:52:02	14:25:39	0.00	0.00	-0.53	0.00	0.00	0.01	146.00	
5:52:32	14:26:09	0.00	0.00	-0.53	0.00	0.00	0.01	143.80	
5:53:02	14:26:39	0.00	0.00	-0.52	0.00	0.00	0.02	141.50	
5:53:32	14:27:09	0.00	0.00	-0.52	0.00	0.00	0.02	139.60	
5:54:02	14:27:39	0.00	0.00	-0.53	0.00	0.00	0.02	138.00	
5:54:32	14:28:09	0.00	0.00	-0.52	0.00	0.00	0.02	136.10	
5:55:02	14:28:39	0.00	0.00	-0.52	0.00	0.00	0.02	134.70	
5:55:32	14:29:09	0.00	0.00	-0.52	0.00	0.00	0.02	133.00	
5:56:02	14:29:39	0.00	0.00	-0.52	0.00	0.00	0.02	131.70	
5:56:32	14:30:09	0.00	0.00	-0.52	0.00	0.00	0.02	130.40	
5:57:02	14:30:39	0.00	0.00	-0.53	0.00	0.00	0.02	128.70	
5:57:32	14:31:09	0.00	0.00	-0.53	0.00	0.00	0.02	127.00	
5:58:02	14:31:39	0.00	0.00	-0.52	0.00	0.00	0.02	125.40	
5:58:32	14:32:09	0.00	0.00	-0.52	0.00	0.00	0.02	124.00	
5:59:02	14:32:39	0.00	0.00	-0.53	0.00	0.00	0.02	122.80	
5:59:32	14:33:09	0.00	0.00	-0.53	0.00	0.00	0.02	121.70	
6:00:02	14:33:39	0.00	0.00	-0.53	0.00	0.00	0.02	120.70	
6:00:32	14:34:09	0.00	0.00	-0.52	0.00	0.00	0.02	119.60	
6:01:02	14:34:39	0.00	0.00	-0.52	0.00	0.00	0.02	118.80	
6:01:32	14:35:09	0.00	0.00	-0.53	0.00	0.00	0.02	117.90	
6:02:02	14:35:39	0.00	0.00	-0.54	0.00	0.00	0.02	117.10	
6:02:32	14:36:09	0.00	0.00	-0.53	0.00	0.00	0.02	116.30	
6:03:02	14:36:39	0.00	0.00	-0.53	0.00	0.00	0.02	115.60	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
6:03:32	14:37:09	0.00	0.00	-0.52	0.00	0.00	0.02	114.70	
6:04:02	14:37:39	0.00	0.00	-0.52	0.00	0.00	0.02	113.90	
6:04:32	14:38:09	0.00	0.00	-0.52	0.00	0.00	0.02	113.40	
6:05:02	14:38:39	0.00	0.00	-0.53	0.00	0.00	0.02	112.70	
6:05:32	14:39:09	0.00	0.00	-0.53	0.00	0.00	0.02	112.00	
6:06:02	14:39:39	0.00	0.00	-0.53	0.00	0.00	0.02	111.30	
6:06:32	14:40:09	0.00	0.00	-0.52	0.00	0.00	0.02	110.90	
6:07:02	14:40:39	0.00	0.00	-0.53	0.00	0.00	0.02	110.10	
6:07:32	14:41:09	0.00	0.00	-0.52	0.00	0.00	0.02	109.60	
6:08:02	14:41:39	0.00	0.00	-0.53	0.00	0.00	0.02	109.10	
6:08:32	14:42:09	0.00	0.00	-0.53	0.00	0.00	0.02	108.50	
6:09:02	14:42:39	0.00	0.00	-0.53	0.00	0.00	0.02	107.90	
6:09:32	14:43:09	0.00	0.00	-0.53	0.00	0.00	0.02	107.30	
6:10:02	14:43:39	0.00	0.00	-0.53	0.00	0.00	0.02	106.60	
6:10:32	14:44:09	0.00	0.00	-0.53	0.00	0.00	0.02	106.20	
6:11:02	14:44:39	0.00	0.00	-0.54	0.00	0.00	0.02	105.70	
6:11:32	14:45:09	0.00	0.00	-0.52	0.00	0.00	0.02	105.10	
6:12:02	14:45:39	0.00	0.00	-0.53	0.00	0.00	0.02	104.60	
6:12:32	14:46:09	0.00	0.00	-0.54	0.00	0.00	0.02	104.10	
6:13:02	14:46:39	0.00	0.00	-0.53	0.00	0.00	0.02	103.70	
6:13:32	14:47:09	0.00	0.00	-0.52	0.00	0.00	0.03	103.10	
6:14:02	14:47:39	0.00	0.00	-0.52	0.00	0.00	0.02	102.70	
6:14:32	14:48:09	0.00	0.00	-0.53	0.00	0.00	0.03	102.10	
6:15:02	14:48:39	0.00	0.00	-0.52	0.00	0.00	0.02	101.80	
6:15:32	14:49:09	0.00	0.00	-0.54	0.00	0.00	0.03	101.20	
6:16:02	14:49:39	0.00	0.00	-0.52	0.00	0.00	0.02	100.90	
6:16:32	14:50:09	0.00	0.00	-0.53	0.00	0.00	0.02	100.30	
6:17:02	14:50:39	0.00	0.00	-0.53	0.00	0.00	0.02	100.00	
6:17:32	14:51:09	0.00	0.00	-0.52	0.00	0.00	0.03	99.60	
6:18:02	14:51:39	0.00	0.00	-0.53	0.00	0.00	0.03	99.10	
6:18:32	14:52:09	0.00	0.00	-0.52	0.00	0.00	0.03	98.60	
6:19:02	14:52:39	0.00	0.00	-0.53	0.00	0.00	0.03	98.30	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
6:19:32	14:53:09	0.00	0.00	-0.52	0.00	0.00	0.03	97.80	
6:20:02	14:53:39	0.00	0.00	-0.53	0.00	0.00	0.03	97.50	
6:20:32	14:54:09	0.00	0.00	-0.52	0.00	0.00	0.03	97.20	
6:21:02	14:54:39	0.00	0.00	-0.53	0.00	0.00	0.03	96.90	
6:21:32	14:55:09	0.00	0.00	-0.52	0.00	0.00	0.03	96.40	
6:22:02	14:55:39	0.00	0.00	-0.53	0.00	0.00	0.03	96.10	
6:22:32	14:56:09	0.00	0.00	-0.53	0.00	0.00	0.03	95.70	
6:23:02	14:56:39	0.00	0.00	-0.52	0.00	0.00	0.02	95.40	
6:23:32	14:57:09	0.00	0.00	-0.52	0.00	0.00	0.03	95.10	
6:24:02	14:57:39	0.00	0.00	-0.53	0.00	0.00	0.03	94.80	
6:24:32	14:58:09	0.00	0.00	-0.52	0.00	0.00	0.03	94.60	
6:25:02	14:58:39	0.00	0.00	-0.54	0.00	0.00	0.03	94.20	
6:25:32	14:59:09	0.00	0.00	-0.53	0.00	0.00	0.03	93.90	
6:26:02	14:59:39	0.00	0.00	-0.54	0.00	0.00	0.03	93.60	
6:26:32	15:00:09	0.00	0.00	-0.53	0.00	0.00	0.03	93.40	
6:27:02	15:00:39	0.00	0.00	-0.53	0.00	0.00	0.03	93.10	
6:27:32	15:01:09	0.00	0.00	-0.52	0.00	0.00	0.03	92.80	
6:28:02	15:01:39	0.00	0.00	-0.52	0.00	0.00	0.03	92.60	
6:28:32	15:02:09	0.00	0.00	-0.53	0.00	0.00	0.03	92.30	
6:29:02	15:02:39	0.00	0.00	-0.53	0.00	0.00	0.03	92.00	
6:29:32	15:03:09	0.00	0.00	-0.54	0.00	0.00	0.03	91.90	
6:30:02	15:03:39	0.00	0.00	-0.52	0.00	0.00	0.03	91.60	
6:30:32	15:04:10	0.00	0.00	-0.53	0.00	0.00	0.03	91.40	
6:31:02	15:04:39	0.00	0.00	-0.52	0.00	0.00	0.03	91.10	
6:31:32	15:05:09	0.00	0.00	-0.53	0.00	0.00	0.03	90.90	
6:32:02	15:05:39	0.00	0.00	-0.53	0.00	0.00	0.03	90.60	
6:32:32	15:06:09	0.00	0.00	-0.53	0.00	0.00	0.03	90.50	
6:33:02	15:06:39	0.00	0.00	-0.53	0.00	0.00	0.03	90.30	
6:33:32	15:07:09	0.00	0.00	-0.52	0.00	0.00	0.03	90.10	
6:34:02	15:07:39	0.00	0.00	-0.53	0.00	0.00	0.03	89.80	
6:34:32	15:08:09	0.00	0.00	-0.53	0.00	0.00	0.03	89.70	
6:35:02	15:08:39	0.00	0.00	-0.53	0.00	0.00	0.03	89.50	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
6:35:32	15:09:09	0.00	0.00	-0.53	0.00	0.00	0.03	89.30	
6:36:02	15:09:39	0.00	0.00	-0.53	0.00	0.00	0.03	89.10	
6:36:32	15:10:09	0.00	0.00	-0.53	0.00	0.00	0.03	89.00	
6:37:04	15:10:41	0.00	0.00	-0.53	0.00	0.00	0.04	88.60	
6:37:32	15:11:09	0.00	0.00	-0.52	0.00	0.00	0.03	88.50	
6:38:02	15:11:39	0.00	0.00	-0.54	0.00	0.00	0.03	88.40	
6:38:32	15:12:09	0.00	0.00	-0.52	0.00	0.00	0.03	88.20	
6:39:02	15:12:39	0.00	0.00	-0.53	0.00	0.00	0.04	88.10	
6:39:32	15:13:09	0.00	0.00	-0.52	0.00	0.00	0.03	87.90	
6:40:02	15:13:39	0.00	0.00	-0.53	0.00	0.00	0.03	87.70	
6:40:32	15:14:09	0.00	0.00	-0.53	0.00	0.00	0.03	87.60	
6:41:02	15:14:39	0.00	0.00	-0.53	0.00	0.00	0.03	87.40	
6:41:32	15:15:09	0.00	0.00	-0.53	0.00	0.00	0.04	87.30	
6:42:02	15:15:39	0.00	0.00	-0.53	0.00	0.00	0.03	87.20	
6:42:32	15:16:09	0.00	0.00	-0.53	0.00	0.00	0.04	87.10	
6:43:02	15:16:39	0.00	0.00	-0.53	0.00	0.00	0.03	86.90	
6:43:32	15:17:09	0.00	0.00	-0.53	0.00	0.00	0.03	86.70	
6:44:02	15:17:39	0.00	0.00	-0.53	0.00	0.00	0.03	86.60	
6:44:32	15:18:09	0.00	0.00	-0.52	0.00	0.00	0.03	86.40	
6:45:02	15:18:39	0.00	0.00	-0.53	0.00	0.00	0.03	86.40	
6:45:36	15:19:14	0.00	0.00	-0.52	0.00	0.00	0.03	86.20	
6:46:02	15:19:39	0.00	0.00	-0.54	0.00	0.00	0.03	86.10	
6:46:32	15:20:09	0.00	0.00	-0.52	0.00	0.00	0.03	86.00	
6:47:02	15:20:39	0.00	0.00	-0.53	0.00	0.00	0.03	86.00	
6:47:32	15:21:09	0.00	0.00	-0.53	0.00	0.00	0.03	85.80	
6:48:02	15:21:39	0.00	0.00	-0.53	0.00	0.00	0.04	85.70	
6:48:32	15:22:09	0.00	0.00	-0.52	0.00	0.00	0.04	85.50	
6:49:02	15:22:39	0.00	0.00	-0.53	0.00	0.00	0.04	85.40	
6:49:32	15:23:09	0.00	0.00	-0.53	0.00	0.00	0.04	85.20	
6:50:02	15:23:39	0.00	0.00	-0.53	0.00	0.00	0.03	85.10	
6:50:32	15:24:09	0.00	0.00	-0.53	0.00	0.00	0.04	85.10	
6:51:02	15:24:39	0.00	0.00	-0.52	0.00	0.00	0.03	84.90	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
6:51:32	15:25:09	0.00	0.00	-0.53	0.00	0.00	0.04	84.90	
6:52:02	15:25:39	0.00	0.00	-0.53	0.00	0.00	0.04	84.80	
6:52:32	15:26:09	0.00	0.00	-0.53	0.00	0.00	0.04	84.70	
6:53:02	15:26:39	0.00	0.00	-0.53	0.00	0.00	0.04	84.60	
6:53:32	15:27:09	0.00	0.00	-0.52	0.00	0.00	0.03	84.50	
6:54:02	15:27:39	0.00	0.00	-0.53	0.00	0.00	0.04	84.30	
6:54:32	15:28:09	0.00	0.00	-0.53	0.00	0.00	0.03	84.30	
6:55:02	15:28:39	0.00	0.00	-0.53	0.00	0.00	0.04	84.20	
6:55:32	15:29:09	0.00	0.00	-0.53	0.00	0.00	0.03	84.20	
6:56:02	15:29:39	0.00	0.00	-0.53	0.00	0.00	0.04	84.10	
6:56:32	15:30:09	0.00	0.00	-0.54	0.00	0.00	0.04	84.00	
6:57:02	15:30:39	0.00	0.00	-0.52	0.00	0.00	0.03	83.90	
6:57:32	15:31:09	0.00	0.00	-0.53	0.00	0.00	0.04	83.90	
6:58:02	15:31:39	0.00	0.00	-0.53	0.00	0.00	0.04	83.80	
6:58:32	15:32:09	0.00	0.00	-0.54	0.00	0.00	0.03	83.80	
6:59:02	15:32:39	0.00	0.00	-0.53	0.00	0.00	0.04	83.70	
6:59:32	15:33:09	0.00	0.00	-0.53	0.00	0.00	0.03	83.70	
7:00:02	15:33:39	0.00	0.00	-0.53	0.00	0.00	0.03	83.50	
7:00:32	15:34:09	0.00	0.00	-0.53	0.00	0.00	0.03	83.50	
7:01:02	15:34:39	0.00	0.00	-0.53	0.00	0.00	0.03	83.50	
7:01:32	15:35:09	0.00	0.00	-0.53	0.00	0.00	0.04	83.50	
7:02:02	15:35:39	3.77	29.50	-4.54	95.70	54.50	0.75	83.40	
7:02:32	15:36:09	2.63	11.90	-3.46	130.70	118.70	1.43	96.80	
7:03:02	15:36:39	2.57	11.50	-3.39	127.70	116.90	1.40	108.00	
7:03:32	15:37:09	2.63	12.40	-3.37	129.50	117.90	1.44	115.00	
7:04:02	15:37:39	2.57	11.30	-3.36	128.20	118.40	1.41	119.70	
7:04:32	15:38:09	2.57	12.50	-3.36	131.30	117.90	1.41	123.20	
7:05:02	15:38:39	2.57	11.70	-3.39	129.00	119.00	1.42	126.60	
7:05:32	15:39:09	2.55	11.70	-3.34	129.60	118.10	1.42	129.30	
7:06:02	15:39:39	2.58	12.10	-3.38	128.90	113.30	1.43	131.80	
7:06:32	15:40:09	0.00	0.00	-0.56	0.00	0.00	0.05	132.00	
7:07:02	15:40:39	0.00	0.00	-0.53	0.00	0.00	0.04	127.10	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
7:07:32	15:41:09	0.00	0.00	-0.52	0.00	0.00	0.04	122.20	
7:08:02	15:41:39	0.00	0.00	-0.53	0.00	0.00	0.04	119.00	
7:08:32	15:42:09	0.00	0.00	-0.53	0.00	0.00	0.04	115.60	
7:09:02	15:42:39	0.00	0.00	-0.52	0.00	0.00	0.04	113.50	
7:09:32	15:43:09	0.00	0.00	-0.52	0.00	0.00	0.04	111.20	
7:10:02	15:43:39	0.00	0.00	-0.53	0.00	0.00	0.04	109.50	
7:10:32	15:44:09	0.00	0.00	-0.53	0.00	0.00	0.04	107.90	
7:11:02	15:44:39	5.26	27.10	-5.92	31.30	0.00	0.11	106.90	
7:11:32	15:45:09	5.26	17.60	-5.91	20.20	0.00	0.04	112.50	
7:12:02	15:45:39	5.10	17.00	-5.74	22.10	0.00	0.05	116.90	
7:12:32	15:46:09	5.11	16.20	-5.71	18.70	0.00	0.04	121.10	
7:13:02	15:46:39	0.00	0.00	-0.46	0.00	0.00	0.03	118.30	
7:13:32	15:47:09	0.00	0.00	-0.37	0.00	0.00	0.03	115.10	
7:14:02	15:47:39	0.00	0.00	-0.35	0.00	0.00	0.03	112.80	
7:14:32	15:48:09	0.00	0.00	-0.32	0.00	0.00	0.04	110.00	
7:15:02	15:48:39	0.00	0.00	-0.32	0.00	0.00	0.04	107.90	
7:15:32	15:49:09	0.00	0.00	-0.52	0.00	0.00	0.03	106.00	
7:16:02	15:49:39	0.00	0.00	-0.52	0.00	0.00	0.03	104.30	
7:16:32	15:50:09	0.00	0.00	-0.53	0.00	0.00	0.03	102.80	
7:17:02	15:50:39	0.00	0.00	-0.53	0.00	0.00	0.03	101.90	
7:17:32	15:51:09	7.96	32.10	-8.67	115.70	77.40	1.00	101.00	
7:18:02	15:51:39	5.50	412.00	-5.45	129.10	227.20	1.16	105.90	
7:18:32	15:52:09	0.00	0.00	-0.54	0.00	0.00	0.04	111.50	
7:19:02	15:52:40	0.00	0.00	-0.54	0.00	0.00	0.03	109.80	
7:19:32	15:53:10	0.00	0.00	-0.54	0.00	0.00	0.03	107.70	
7:20:02	15:53:40	0.00	0.00	-0.54	0.00	0.00	0.03	105.80	
7:20:32	15:54:10	0.00	0.00	-0.54	0.00	0.00	0.03	104.10	
7:21:02	15:54:40	5.45	32.60	-6.16	124.60	94.30	1.26	111.70	
7:21:32	15:55:10	6.17	21.80	-6.84	122.10	99.10	1.21	120.00	
7:22:02	15:55:40	3.80	0.00	-4.30	0.00	0.00	0.05	126.20	
7:22:32	15:56:10	0.00	0.00	-0.54	0.00	0.00	0.03	124.90	
7:23:02	15:56:40	0.00	0.00	-0.54	0.00	0.00	0.03	121.20	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	SVE Well Vacuum	SVE Well Airflow 2"	SVE/DPE Blower Inlet Vac	SVE/DPE Blower Inlet Flow	Dilution Valve Airflow	SVE Discharge Pressure	SVE/DPE Discharge Temp	COMMENTS
		IN HG	SCFM	IN HG	SCFM	SCFM	PSI	DEG F	
7:23:32	15:57:10	0.00	0.00	-0.54	0.00	0.00	0.03	117.80	
7:24:02	15:57:40	0.00	0.00	-0.54	0.00	0.00	0.03	115.20	
7:24:32	15:58:10	0.00	0.00	-0.54	0.00	0.00	0.03	112.50	
7:25:02	15:58:40	0.00	0.00	-0.53	0.00	0.00	0.03	110.40	
7:25:32	15:59:10	0.00	0.00	-0.53	0.00	0.00	0.03	108.60	
									end all sampling and test

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:00:00	8:33:37	0.00	0.00	0.00	
0:00:30	8:34:07	0.00	0.00	-0.01	
0:01:00	8:34:37	0.00	0.00	0.00	
0:01:30	8:35:07	0.00	0.00	-0.01	
0:02:00	8:35:37	0.00	0.00	-0.01	
0:02:30	8:36:07	0.00	0.00	-0.01	
0:03:00	8:36:37	0.00	0.00	-0.02	
0:03:30	8:37:07	0.00	-0.01	-0.01	
0:04:00	8:37:37	0.00	0.00	-0.07	
0:04:30	8:38:07	0.00	0.00	-0.07	
0:05:00	8:38:37	0.00	-0.01	-0.07	
0:05:30	8:39:07	0.00	0.00	-0.07	
0:06:00	8:39:37	0.00	0.00	-0.02	
0:06:30	8:40:07	0.02	0.00	0.00	Begin pumping down RW-1
0:07:00	8:40:37	0.00	-0.01	0.00	
0:07:30	8:41:07	0.00	0.00	-0.01	
0:08:00	8:41:37	0.00	0.00	0.01	
0:08:30	8:42:07	-0.32	0.00	0.00	
0:09:00	8:42:37	-0.15	-0.02	-0.01	
0:09:30	8:43:07	-0.43	-0.01	-0.01	
0:10:00	8:43:37	-0.58	0.00	0.00	
0:10:30	8:44:07	-0.60	-0.01	-0.01	
0:11:00	8:44:37	-0.73	-0.01	-0.01	
0:11:30	8:45:07	-0.92	-0.02	0.01	
0:12:00	8:45:37	-1.14	-0.02	-0.01	
0:12:30	8:46:07	-1.41	-0.02	-0.05	
0:14:01	8:47:38	-1.41	-0.02	-0.07	
0:14:01	8:47:38	-1.41	-0.03	0.00	
0:14:30	8:48:07	-1.41	-0.03	-0.01	
0:15:00	8:48:37	-1.41	-0.03	-0.01	
0:15:30	8:49:07	-1.41	-0.03	-0.01	
0:16:00	8:49:37	-1.41	-0.04	-0.02	
0:16:30	8:50:07	-1.41	-0.05	-0.01	
0:17:00	8:50:37	-1.41	-0.05	-0.01	
0:17:30	8:51:07	-1.41	-0.05	-0.02	
0:18:00	8:51:37	-1.41	-0.06	-0.01	
0:18:30	8:52:07	-1.41	-0.06	-0.01	
0:19:00	8:52:37	-1.41	-0.06	0.00	
0:19:30	8:53:07	-1.41	-0.06	-0.01	
0:20:00	8:53:37	-1.41	-0.08	0.00	
0:20:30	8:54:08	-1.41	-0.08	0.00	
0:21:00	8:54:37	-1.41	-0.08	0.00	
0:21:30	8:55:07	-1.41	-0.09	-0.02	
0:22:00	8:55:37	-1.41	-0.09	0.00	
0:22:30	8:56:07	-1.41	-0.09	0.01	
0:23:00	8:56:37	-1.41	-0.09	-0.02	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:23:30	8:57:08	-1.41	-0.11	-0.01	
0:24:00	8:57:37	-1.41	-0.11	-0.01	
0:24:30	8:58:07	-1.41	-0.11	-0.02	
0:25:00	8:58:37	-1.41	-0.11	0.00	
0:25:30	8:59:07	-1.41	-0.11	-0.02	
0:26:00	8:59:37	-1.41	-0.12	0.00	
0:26:30	9:00:08	-1.41	-0.13	0.01	
0:27:00	9:00:38	-1.41	-0.12	0.06	
0:27:30	9:01:08	-1.41	-0.12	0.02	Begin VEGE 707 blower
0:28:00	9:01:38	-1.41	-0.13	0.04	
0:28:30	9:02:08	-1.41	-0.12	-0.01	
0:29:00	9:02:38	-1.41	-0.13	0.04	
0:32:53	9:06:30	-1.41	-0.16	0.03	
0:32:53	9:06:30	-1.41	-0.25	-0.01	
0:33:00	9:06:38	-1.41	-0.26	-0.01	
0:33:30	9:07:08	-1.41	-0.26	-0.01	Begin step 1 @41" WC
0:34:00	9:07:38	-1.41	-0.26	-0.03	
0:34:30	9:08:08	-1.41	-0.28	-0.05	
0:35:00	9:08:38	-1.41	-0.28	-0.01	
0:35:30	9:09:08	-1.41	-0.28	-0.01	
0:36:00	9:09:38	-1.41	-0.28	0.00	
0:36:30	9:10:08	-1.41	-0.30	-0.02	
0:37:00	9:10:38	-1.41	-0.30	-0.03	
0:37:30	9:11:08	-1.41	-0.30	-0.03	
0:38:00	9:11:38	-1.41	-0.29	-0.02	
0:38:30	9:12:08	-1.41	-0.30	-0.01	
0:39:00	9:12:38	-1.41	-0.29	-0.03	
0:39:30	9:13:08	-1.41	-0.30	-0.01	
0:40:00	9:13:38	-1.41	-0.30	0.00	
0:40:30	9:14:08	-1.41	-0.30	-0.01	
0:41:00	9:14:38	-1.41	-0.30	0.01	
0:41:30	9:15:08	-1.41	-0.30	-0.05	
0:42:00	9:15:38	-1.41	-0.30	-0.02	
0:42:30	9:16:08	-1.41	-0.30	0.00	
0:43:00	9:16:38	-1.41	-0.29	-0.02	
0:43:30	9:17:08	-1.41	-0.30	0.00	
0:44:00	9:17:38	-1.41	-0.28	-0.03	
0:44:30	9:18:08	-1.41	-0.28	-0.02	
0:45:00	9:18:38	-1.41	-0.28	0.00	
0:45:30	9:19:08	-1.41	-0.28	-0.01	
0:46:00	9:19:38	-1.41	-0.28	-0.05	
0:46:30	9:20:08	-1.41	-0.26	0.01	
0:47:00	9:20:38	-1.41	-0.26	-0.01	
0:47:30	9:21:08	-1.41	-0.26	0.00	
0:48:40	9:22:18	-1.41	-0.26	0.00	
0:49:00	9:22:38	-1.41	-0.26	-0.01	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:49:30	9:23:08	-1.41	-0.26	-0.02	
0:50:00	9:23:38	-1.41	-0.25	-0.01	
0:50:30	9:24:08	-1.41	-0.25	0.00	
0:51:00	9:24:38	-1.41	-0.25	0.00	
0:51:30	9:25:08	-1.41	-0.25	0.01	
0:52:00	9:25:38	-1.41	-0.25	-0.01	
0:52:30	9:26:08	-1.41	-0.25	0.00	
0:53:00	9:26:38	-1.41	-0.25	-0.01	
0:53:30	9:27:08	-1.41	-0.25	0.00	
0:54:00	9:27:38	-1.41	-0.25	0.00	
0:54:30	9:28:08	-1.41	-0.25	-0.01	
0:55:00	9:28:38	-1.41	-0.25	0.02	
0:55:30	9:29:08	-1.41	-0.25	0.01	
0:56:00	9:29:38	-1.41	-0.25	0.00	
0:56:30	9:30:08	-1.41	-0.26	0.00	
0:57:00	9:30:38	-1.41	-0.27	0.00	
0:57:30	9:31:08	-1.41	-0.25	0.01	
0:58:00	9:31:38	-1.41	-0.27	0.00	
0:58:30	9:32:08	-1.41	-0.25	0.00	
0:59:00	9:32:38	-1.41	-0.25	0.00	
0:59:30	9:33:08	-1.41	-0.25	0.00	
1:00:00	9:33:38	-1.41	-0.23	0.01	
1:00:30	9:34:08	-1.41	-0.23	0.00	
1:01:00	9:34:38	-1.41	-0.23	0.01	
1:01:30	9:35:08	-1.41	-0.23	0.01	
1:02:00	9:35:38	-1.41	-0.25	-0.01	
1:02:30	9:36:08	-1.41	-0.23	-0.01	
1:03:00	9:36:38	-1.41	-0.23	-0.01	
1:03:30	9:37:08	-1.41	-0.23	0.00	
1:04:00	9:37:38	-1.41	-0.23	0.01	
1:04:30	9:38:08	-1.41	-0.23	0.00	
1:05:00	9:38:38	-1.41	-0.23	0.00	
1:05:31	9:39:08	-1.41	-0.23	0.00	
1:06:00	9:39:38	-1.41	-0.23	-0.01	
1:06:30	9:40:08	-1.41	-0.23	0.01	
1:07:00	9:40:38	-1.41	-0.23	0.00	
1:07:30	9:41:08	-1.41	-0.23	0.00	
1:08:00	9:41:38	-1.41	-0.23	0.00	
1:08:30	9:42:08	-1.41	-0.24	0.00	
1:09:00	9:42:38	-1.41	-0.25	0.00	
1:09:30	9:43:08	-1.41	-0.24	0.00	
1:10:00	9:43:38	-1.41	-0.23	0.00	
1:10:30	9:44:08	-1.41	-0.23	0.02	
1:11:00	9:44:38	-1.41	-0.23	0.00	
1:11:30	9:45:08	-1.41	-0.23	-0.01	
1:12:00	9:45:38	-1.41	-0.23	0.01	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:12:30	9:46:08	-1.41	-0.23	0.00	
1:13:00	9:46:38	-1.41	-0.22	0.00	
1:13:30	9:47:08	-1.41	-0.22	0.00	
1:14:00	9:47:38	-1.41	-0.23	0.00	
1:14:30	9:48:08	-1.41	-0.23	-0.01	
1:15:00	9:48:38	-1.41	-0.23	-0.01	
1:15:30	9:49:08	-1.41	-0.23	0.00	
1:16:00	9:49:38	-1.41	-0.23	0.00	
1:16:30	9:50:08	-1.41	-0.23	0.00	
1:17:00	9:50:38	-1.41	-0.23	0.00	
1:17:30	9:51:08	-1.41	-0.24	0.00	
1:18:00	9:51:38	-1.41	-0.23	-0.01	
1:18:30	9:52:08	-1.41	-0.23	-0.01	
1:28:57	10:02:34	-1.41	-0.23	-0.01	
1:28:59	10:02:36	-1.41	-0.23	-0.01	
1:29:00	10:02:38	-1.41	-0.23	0.01	
1:29:02	10:02:39	-1.41	-0.23	0.01	
1:29:02	10:02:40	-1.41	-0.23	0.00	
1:29:30	10:03:08	-1.41	-0.23	-0.01	
1:30:00	10:03:38	-1.41	-0.23	0.00	
1:30:30	10:04:08	-1.41	-0.23	0.00	
1:31:00	10:04:38	-1.41	-0.23	0.01	
1:31:30	10:05:08	-1.41	-0.23	-0.01	
1:32:00	10:05:38	-1.41	-0.23	0.00	
1:32:30	10:06:08	-1.41	-0.25	0.00	
1:33:00	10:06:38	-1.41	-0.25	0.01	
1:33:30	10:07:08	-1.41	-0.23	0.00	
1:34:00	10:07:38	-1.41	-0.23	-0.01	
1:34:30	10:08:08	-1.41	-0.23	-0.01	
1:35:00	10:08:38	-1.41	-0.23	0.00	
1:35:30	10:09:08	-1.41	-0.23	0.00	
1:36:00	10:09:38	-1.41	-0.23	0.00	
1:36:30	10:10:08	-1.41	-0.23	0.01	Begin step 2 max vac with 707 blower
1:37:00	10:10:38	-1.41	-0.23	-0.01	
1:37:30	10:11:08	-1.41	-0.23	-0.01	
1:38:00	10:11:38	-1.41	-0.23	0.01	
1:38:31	10:12:08	-1.41	-0.23	0.00	
1:39:01	10:12:38	-1.41	-0.23	0.00	
1:39:30	10:13:08	-1.41	-0.25	0.00	
1:40:00	10:13:38	-1.41	-0.25	-0.01	
1:40:30	10:14:08	-1.41	-0.26	0.01	
1:41:00	10:14:38	-1.41	-0.26	0.00	
1:41:30	10:15:08	-1.41	-0.26	0.00	
1:42:00	10:15:38	-1.41	-0.26	0.00	
1:42:30	10:16:08	-1.41	-0.26	0.00	
1:43:00	10:16:38	-1.41	-0.28	0.01	

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:43:31	10:17:08	-1.41	-0.28	0.00	
1:44:16	10:17:54	-1.41	-0.28	0.00	
1:44:30	10:18:08	-1.41	-0.28	-0.01	
1:45:00	10:18:38	-1.41	-0.28	0.01	
1:45:30	10:19:08	-1.41	-0.30	-0.01	
1:46:00	10:19:38	-1.41	-0.29	0.01	
1:46:30	10:20:08	-1.41	-0.30	0.00	
1:47:01	10:20:38	-1.41	-0.28	0.00	
1:47:31	10:21:08	-1.41	-0.29	0.00	
1:48:01	10:21:38	-1.41	-0.29	0.00	
1:48:31	10:22:08	-1.41	-0.29	0.00	
1:49:01	10:22:38	-1.41	-0.31	0.01	
1:49:31	10:23:08	-1.41	-0.31	0.01	
1:50:01	10:23:38	-1.41	-0.29	0.02	
1:50:31	10:24:08	-1.41	-0.31	0.01	
1:51:01	10:24:38	-1.41	-0.31	0.00	
1:51:31	10:25:08	-1.41	-0.31	0.02	
1:52:01	10:25:38	-1.41	-0.31	0.02	
1:52:31	10:26:08	-1.41	-0.32	0.02	
1:53:01	10:26:38	-1.41	-0.32	0.03	
1:53:31	10:27:08	-1.41	-0.34	0.03	
1:54:01	10:27:38	-1.41	-0.34	0.00	
1:54:31	10:28:08	-1.41	-0.33	0.03	
1:55:01	10:28:38	-1.41	-0.34	0.02	
1:55:31	10:29:08	-1.41	-0.34	0.03	
1:56:01	10:29:38	-1.41	-0.32	0.03	
1:56:31	10:30:08	-1.41	-0.31	0.03	
1:57:01	10:30:38	-1.41	-0.32	0.02	
1:57:31	10:31:08	-1.41	-0.34	0.03	
1:58:02	10:31:39	-1.41	-0.34	0.03	
1:58:31	10:32:08	-1.41	-0.34	0.04	
1:59:01	10:32:38	-1.41	-0.34	0.04	
1:59:31	10:33:08	-1.41	-0.34	0.03	
2:00:01	10:33:38	-1.41	-0.34	0.05	
2:00:31	10:34:08	-1.41	-0.34	0.05	
2:01:01	10:34:38	-1.41	-0.36	0.04	
2:01:31	10:35:08	-1.41	-0.36	0.05	
2:02:01	10:35:38	-1.41	-0.35	0.04	
2:02:31	10:36:08	-1.41	-0.36	0.05	
2:03:01	10:36:38	-1.41	-0.37	0.04	
2:03:31	10:37:08	-1.41	-0.36	0.04	
2:04:01	10:37:38	-1.41	-0.35	0.05	
2:04:31	10:38:08	-1.41	-0.35	0.04	
2:05:01	10:38:38	-1.41	-0.36	0.05	
2:05:31	10:39:08	-1.41	-0.37	0.05	
2:06:01	10:39:38	-1.41	-0.37	0.05	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:06:31	10:40:08	-1.41	-0.39	0.04	
2:07:01	10:40:38	-1.41	-0.39	0.05	
2:07:31	10:41:08	-1.41	-0.39	0.05	
2:08:01	10:41:38	-1.41	-0.37	0.06	
2:08:31	10:42:08	-1.41	-0.36	0.05	
2:09:01	10:42:38	-1.41	-0.35	0.07	
2:09:31	10:43:08	-1.41	-0.37	0.05	
2:10:01	10:43:38	-1.41	-0.37	0.01	
2:10:31	10:44:08	-1.41	-0.37	0.05	
2:11:01	10:44:38	-1.41	-0.39	0.05	
2:11:31	10:45:08	-1.41	-0.39	0.04	
2:12:01	10:45:38	-1.41	-0.37	0.05	
2:12:31	10:46:08	-1.41	-0.37	0.05	
2:13:01	10:46:38	-1.41	-0.39	0.05	
2:13:31	10:47:08	-1.41	-0.38	0.05	
2:14:01	10:47:38	-1.41	-0.37	0.05	
2:14:31	10:48:08	-1.41	-0.37	0.05	
2:15:01	10:48:38	-1.41	-0.38	0.05	
2:15:31	10:49:08	-1.41	-0.39	0.06	
2:16:01	10:49:38	-1.41	-0.39	0.05	
2:16:31	10:50:08	-1.41	-0.39	0.05	
2:17:01	10:50:38	-1.41	-0.39	0.06	
2:17:31	10:51:08	-1.41	-0.38	0.05	
2:18:01	10:51:38	-1.41	-0.37	0.06	
2:18:31	10:52:08	-1.41	-0.39	0.06	
2:19:01	10:52:38	-1.41	-0.39	0.06	
2:19:31	10:53:08	-1.41	-0.40	0.05	
2:20:01	10:53:38	-1.41	-0.39	0.06	
2:20:31	10:54:08	-1.41	-0.37	0.05	
2:21:01	10:54:38	-1.41	-0.37	0.06	
2:21:31	10:55:08	-1.41	-0.39	0.06	
2:22:01	10:55:38	-1.41	-0.40	0.05	
2:22:31	10:56:08	-1.41	-0.39	0.05	
2:23:01	10:56:38	-1.41	-0.39	0.06	
2:23:31	10:57:08	-1.41	-0.39	0.06	
2:24:01	10:57:38	-1.41	-0.39	0.06	
2:24:31	10:58:08	-1.41	-0.39	0.06	
2:25:01	10:58:38	-1.41	-0.37	0.06	
2:25:31	10:59:08	-1.41	-0.37	0.06	
2:26:01	10:59:38	-1.41	-0.37	0.05	
2:26:31	11:00:08	-1.41	-0.37	0.07	
2:27:01	11:00:38	-1.41	-0.37	0.07	
2:27:31	11:01:08	-1.41	-0.39	0.06	
2:28:01	11:01:38	-1.41	-0.40	0.07	
2:28:31	11:02:08	-1.41	-0.40	0.06	
2:29:01	11:02:38	-1.41	-0.39	0.07	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:29:31	11:03:08	-1.41	-0.39	0.06	
2:30:01	11:03:38	-1.41	-0.40	0.06	
2:30:31	11:04:08	-1.41	-0.40	0.06	
2:31:01	11:04:38	-1.41	-0.39	0.06	
2:31:31	11:05:08	-1.41	-0.38	0.07	
2:32:01	11:05:38	-1.41	-0.39	0.06	
2:32:31	11:06:08	-1.41	-0.39	0.06	
2:33:01	11:06:38	-1.41	-0.40	0.07	
2:33:31	11:07:08	-1.41	-0.40	0.06	
2:34:01	11:07:38	-1.41	-0.38	0.07	
2:34:31	11:08:08	-1.41	-0.39	0.06	
2:35:01	11:08:38	-1.41	-0.39	0.06	
2:35:31	11:09:08	-1.41	-0.39	0.05	
2:36:02	11:09:39	-1.41	-0.40	0.05	
2:36:31	11:10:08	-1.41	-0.40	0.08	
2:37:01	11:10:38	-1.41	-0.40	0.07	
2:37:31	11:11:08	-1.41	-0.40	0.07	
2:38:01	11:11:38	-1.41	-0.40	0.06	
2:38:31	11:12:08	-1.41	-0.40	0.05	
2:39:01	11:12:38	-1.41	-0.40	0.08	
2:39:31	11:13:08	-1.41	-0.39	0.06	
2:40:01	11:13:38	-1.41	-0.40	0.06	
2:40:31	11:14:08	-1.41	-0.42	0.05	
2:41:01	11:14:38	-1.41	-0.42	0.05	
2:41:31	11:15:08	-1.41	-0.41	0.05	
2:42:01	11:15:38	-1.41	-0.39	0.06	
2:42:31	11:16:08	-1.41	-0.40	0.06	
2:43:01	11:16:38	-1.41	-0.40	0.07	
2:43:31	11:17:08	-1.41	-0.41	0.07	
2:44:01	11:17:38	-1.41	-0.40	0.06	
2:44:32	11:18:10	-1.41	-0.40	0.02	
2:45:01	11:18:38	-1.41	-0.41	0.08	
2:45:31	11:19:08	-1.41	-0.40	0.07	
2:46:01	11:19:38	-1.41	-0.41	0.07	End step 2 swith to claw blower
2:46:31	11:20:08	-1.40	-0.42	0.07	
2:47:01	11:20:38	-1.41	-0.40	0.03	
2:47:31	11:21:08	-1.41	-0.39	0.05	
2:48:01	11:21:38	-1.41	-0.39	0.07	
2:48:31	11:22:08	-1.41	-0.40	0.06	
2:49:01	11:22:38	-1.41	-0.45	0.06	
2:49:31	11:23:08	-1.41	-0.49	0.07	
2:50:01	11:23:38	-1.41	-0.55	0.06	
2:50:31	11:24:08	-1.41	-0.60	0.07	
2:51:01	11:24:38	-1.41	-0.62	0.07	
2:51:31	11:25:08	-1.41	-0.63	0.07	
2:52:01	11:25:38	-1.41	-0.65	0.06	

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:52:31	11:26:08	-1.41	-0.66	0.07	
2:53:01	11:26:38	-1.41	-0.66	0.07	
2:53:31	11:27:08	-1.41	-0.66	0.06	
2:54:01	11:27:38	-1.41	-0.66	0.06	
2:54:31	11:28:08	-1.41	-0.65	0.06	
2:55:01	11:28:39	-1.41	-0.65	0.06	
2:55:31	11:29:09	-1.41	-0.65	0.06	
2:56:01	11:29:39	-1.41	-0.66	0.07	
2:56:31	11:30:09	-1.41	-0.72	0.06	
2:57:01	11:30:39	-1.41	-0.76	0.05	
2:57:31	11:31:08	-1.41	-0.80	0.00	
2:58:01	11:31:39	-1.41	-0.85	0.00	
2:58:31	11:32:09	-1.41	-0.91	0.04	
2:59:01	11:32:39	-1.41	-1.03	0.05	
2:59:31	11:33:09	-1.41	-1.12	0.05	
3:00:01	11:33:39	-1.41	-1.20	0.05	
3:00:31	11:34:09	-1.41	-1.27	0.05	
3:01:01	11:34:38	-1.41	-1.34	0.05	
3:01:31	11:35:08	-1.41	-1.40	0.05	
3:02:01	11:35:38	-1.41	-1.47	0.04	
3:02:31	11:36:08	-1.41	-1.56	0.05	
3:03:01	11:36:38	-1.41	-1.62	0.05	
3:03:31	11:37:08	-1.41	-1.71	-0.01	
3:04:01	11:37:38	-1.41	-1.82	0.04	
3:04:31	11:38:08	-1.41	-1.87	0.04	
3:05:01	11:38:38	-1.41	-1.88	0.04	
3:05:31	11:39:08	-1.41	-1.87	0.04	
3:06:01	11:39:38	-1.41	-1.82	0.03	
3:06:31	11:40:08	-1.41	-1.78	0.04	
3:07:01	11:40:38	-1.41	-1.74	0.03	
3:07:31	11:41:08	-1.41	-1.72	0.03	
3:08:01	11:41:38	-1.41	-1.70	0.02	
3:08:31	11:42:08	-1.41	-1.66	0.02	
3:09:01	11:42:38	-1.41	-1.63	0.03	
3:09:31	11:43:08	-1.41	-1.62	0.03	
3:10:01	11:43:38	-1.41	-1.59	0.03	
3:10:31	11:44:08	-1.41	-1.57	0.02	
3:11:01	11:44:38	-1.41	-1.56	0.03	
3:11:31	11:45:08	-1.41	-1.52	0.00	
3:12:01	11:45:38	-1.41	-1.51	0.00	
3:12:31	11:46:08	-1.41	-1.51	0.02	
3:13:01	11:46:38	-1.41	-1.52	0.04	
3:13:31	11:47:08	-1.41	-1.52	0.02	
3:14:01	11:47:38	-1.41	-1.51	0.04	
3:14:31	11:48:08	-1.41	-1.52	0.02	
3:15:01	11:48:38	-1.41	-1.54	0.01	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:15:31	11:49:08	-1.41	-1.53	0.03	
3:16:01	11:49:38	-1.41	-1.52	0.03	
3:16:31	11:50:08	-1.41	-1.51	0.02	
3:17:01	11:50:39	-1.41	-1.52	0.02	
3:17:31	11:51:08	-1.41	-1.54	-0.02	
3:18:01	11:51:39	-1.41	-1.52	0.03	
3:18:31	11:52:09	-1.41	-1.52	0.01	
3:19:01	11:52:39	-1.41	-1.52	0.02	
3:19:31	11:53:09	-1.41	-1.52	0.01	
3:20:01	11:53:39	-1.41	-1.52	0.01	
3:20:31	11:54:09	-1.41	-1.51	0.02	
3:21:01	11:54:39	-1.41	-1.51	0.01	
3:21:31	11:55:09	-1.41	-1.51	0.01	
3:22:01	11:55:39	-1.41	-1.51	0.02	
3:22:31	11:56:09	-1.41	-1.51	0.01	
3:23:01	11:56:39	-1.41	-1.51	0.01	
3:23:31	11:57:09	-1.41	-1.51	0.01	
3:24:01	11:57:39	-1.41	-1.50	0.01	
3:24:31	11:58:09	-1.41	-1.50	0.01	
3:25:01	11:58:39	-1.41	-1.50	0.00	
3:25:31	11:59:09	-1.41	-1.50	0.01	
3:26:01	11:59:39	-1.41	-1.50	0.01	
3:26:31	12:00:09	-1.41	-1.50	0.00	
3:27:01	12:00:39	-1.41	-1.51	0.01	
3:27:31	12:01:09	-1.41	-1.51	0.00	
3:28:01	12:01:39	-1.41	-1.51	0.02	
3:28:31	12:02:09	-1.41	-1.52	0.01	
3:29:01	12:02:39	-1.41	-1.53	0.00	
3:29:31	12:03:09	-1.41	-1.54	0.01	
3:30:02	12:03:39	-1.41	-1.53	0.01	
3:30:31	12:04:09	-1.41	-1.55	0.01	
3:31:01	12:04:39	-1.41	-1.54	0.01	
3:31:31	12:05:09	-1.41	-1.52	0.01	
3:32:01	12:05:39	-1.41	-1.51	0.01	
3:32:31	12:06:09	-1.41	-1.50	0.01	
3:33:01	12:06:39	-1.41	-1.50	0.02	
3:33:31	12:07:09	-1.41	-1.50	0.01	
3:34:01	12:07:39	-1.41	-1.50	0.01	
3:34:31	12:08:09	-1.41	-1.50	0.01	
3:35:01	12:08:39	-1.41	-1.49	0.01	
3:35:31	12:09:09	-1.41	-1.49	-0.01	
3:36:01	12:09:39	-1.41	-1.49	0.01	
3:36:31	12:10:09	-1.41	-1.50	0.01	
3:37:01	12:10:39	-1.41	-1.50	0.01	
3:37:31	12:11:09	-1.41	-1.51	0.01	
3:38:01	12:11:39	-1.41	-1.51	0.01	

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		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:38:31	12:12:09	-1.41	-1.51	0.01	
3:39:01	12:12:39	-1.41	-1.51	0.01	
3:39:31	12:13:09	-1.41	-1.51	0.01	
3:40:01	12:13:39	-1.41	-1.51	0.01	
3:40:31	12:14:09	-1.41	-1.52	0.01	
3:41:01	12:14:39	-1.41	-1.52	0.01	
3:41:31	12:15:09	-1.41	-1.51	0.00	
3:42:01	12:15:39	-1.41	-1.51	0.01	
3:42:31	12:16:09	-1.41	-1.50	0.00	
3:43:01	12:16:39	-1.41	-1.50	0.01	
3:43:31	12:17:09	-1.41	-1.49	0.01	
3:44:01	12:17:39	-1.41	-1.50	0.01	
3:44:31	12:18:09	-1.41	-1.49	0.01	
3:45:01	12:18:39	-1.41	-1.49	0.01	
3:45:31	12:19:09	-1.41	-1.49	0.01	
3:46:01	12:19:39	-1.41	-1.49	0.01	
3:46:31	12:20:09	-1.41	-1.49	0.00	
3:47:01	12:20:39	-1.41	-1.49	0.00	
3:47:31	12:21:09	-1.41	-1.49	0.00	
3:48:01	12:21:39	-1.41	-1.48	0.00	
3:48:31	12:22:09	-1.41	-1.48	0.01	
3:49:01	12:22:39	-1.41	-1.48	0.00	
3:49:31	12:23:09	-1.41	-1.48	0.01	
3:50:01	12:23:39	-1.41	-1.48	0.00	
3:50:31	12:24:09	-1.41	-1.48	0.00	
3:51:01	12:24:39	-1.41	-1.48	0.00	
3:51:31	12:25:09	-1.41	-1.47	-0.01	
3:52:01	12:25:39	-1.41	-1.48	0.00	
3:52:31	12:26:09	-1.41	-1.47	0.00	
3:53:01	12:26:39	-1.41	-1.46	-0.01	
3:53:31	12:27:09	-1.41	-1.45	-0.01	
3:54:01	12:27:39	-1.41	-1.45	-0.01	
3:54:31	12:28:09	-1.41	-1.46	-0.01	
3:55:01	12:28:39	-1.41	-1.46	-0.01	
3:55:31	12:29:09	-1.41	-1.46	0.00	
3:56:01	12:29:39	-1.41	-1.46	-0.01	
3:56:31	12:30:09	-1.41	-1.46	-0.01	
3:57:01	12:30:39	-1.41	-1.45	-0.02	
3:57:31	12:31:09	-1.41	-1.45	-0.01	
3:58:01	12:31:39	-1.41	-1.45	-0.02	
3:58:31	12:32:09	-1.41	-1.45	-0.01	
3:59:01	12:32:39	-1.41	-1.45	-0.02	
3:59:31	12:33:09	-1.41	-1.45	-0.01	
4:00:01	12:33:39	-1.41	-1.45	-0.02	
4:00:31	12:34:09	-1.41	-1.45	-0.03	
4:01:01	12:34:39	-1.41	-1.44	-0.02	

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:01:31	12:35:09	-1.41	-1.44	-0.03	
4:02:01	12:35:39	-1.41	-1.45	-0.02	
4:02:31	12:36:09	-1.41	-1.45	-0.02	
4:03:01	12:36:39	-1.41	-1.45	-0.02	
4:03:31	12:37:09	-1.41	-1.45	-0.03	
4:04:01	12:37:39	-1.41	-1.45	-0.04	
4:04:31	12:38:09	-1.41	-1.45	-0.03	
4:05:01	12:38:39	-1.41	-1.45	-0.02	
4:05:31	12:39:09	-1.41	-1.46	-0.03	
4:06:01	12:39:39	-1.41	-1.46	-0.02	
4:06:31	12:40:09	-1.41	-1.48	-0.03	
4:07:01	12:40:39	-1.41	-1.49	-0.02	
4:07:31	12:41:09	-1.41	-1.49	-0.02	
4:08:01	12:41:39	-1.41	-1.50	-0.03	
4:08:31	12:42:09	-1.41	-1.50	-0.03	
4:09:01	12:42:39	-1.41	-1.50	-0.02	
4:09:31	12:43:09	-1.41	-1.51	-0.02	
4:10:01	12:43:39	-1.41	-1.50	-0.02	
4:10:31	12:44:09	-1.41	-1.50	-0.02	
4:11:01	12:44:39	-1.41	-1.51	0.00	
4:11:31	12:45:09	-1.41	-1.51	0.00	
4:12:01	12:45:39	-1.41	-1.50	0.00	
4:12:31	12:46:09	-1.41	-1.50	-0.01	
4:13:01	12:46:39	-1.41	-1.52	0.00	
4:13:31	12:47:09	-1.41	-1.52	-0.01	
4:14:01	12:47:39	-1.41	-1.52	0.00	
4:14:31	12:48:09	-1.41	-1.52	0.00	
4:15:01	12:48:39	-1.41	-1.52	0.00	
4:15:31	12:49:09	-1.41	-1.52	0.00	
4:16:01	12:49:39	-1.41	-1.54	0.00	
4:16:31	12:50:09	-1.41	-1.56	-0.01	
4:17:01	12:50:39	-1.41	-1.56	0.01	
4:17:31	12:51:09	-1.41	-1.56	0.00	
4:18:01	12:51:39	-1.41	-1.56	-0.01	
4:18:31	12:52:09	-1.41	-1.56	-0.01	
4:19:01	12:52:39	-1.41	-1.56	-0.01	
4:19:31	12:53:09	-1.41	-1.56	-0.01	
4:20:01	12:53:39	-1.41	-1.56	-0.01	
4:20:31	12:54:09	-1.41	-1.56	-0.03	
4:21:02	12:54:39	-1.41	-1.54	-0.01	
4:21:31	12:55:09	-1.41	-1.54	-0.02	
4:22:01	12:55:39	-1.41	-1.54	-0.02	
4:22:31	12:56:09	-1.41	-1.54	-0.02	
4:23:01	12:56:39	-1.41	-1.54	-0.01	
4:23:31	12:57:09	-1.41	-1.54	-0.02	
4:24:01	12:57:39	-1.41	-1.54	-0.02	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:24:31	12:58:09	-1.41	-1.54	-0.02	
4:25:01	12:58:39	-1.41	-1.54	-0.02	
4:25:31	12:59:09	-1.41	-1.54	-0.02	
4:26:01	12:59:39	-1.41	-1.54	-0.03	
4:26:31	13:00:09	-1.41	-1.54	-0.02	
4:27:01	13:00:39	-1.41	-1.53	-0.02	
4:27:31	13:01:09	-1.41	-1.54	-0.03	
4:28:01	13:01:39	-1.41	-1.54	-0.02	
4:28:31	13:02:09	-1.41	-1.54	-0.03	
4:29:01	13:02:39	-1.41	-1.54	-0.02	
4:29:31	13:03:09	-1.41	-1.54	-0.03	
4:30:01	13:03:39	-1.41	-1.54	-0.03	
4:30:31	13:04:09	-1.41	-1.53	-0.03	
4:31:01	13:04:39	-1.41	-1.54	-0.03	
4:31:31	13:05:09	-1.41	-1.54	-0.03	
4:32:01	13:05:39	-1.41	-1.54	-0.03	
4:32:31	13:06:09	-1.41	-1.54	-0.03	
4:33:01	13:06:39	-1.41	-1.54	-0.03	
4:33:31	13:07:09	-1.41	-1.53	-0.03	
4:34:01	13:07:39	-1.41	-1.53	-0.03	
4:34:31	13:08:09	-1.41	-1.54	-0.03	
4:35:01	13:08:39	-1.41	-1.54	-0.06	
4:35:31	13:09:09	-1.41	-1.52	-0.03	
4:36:01	13:09:39	-1.41	-1.52	-0.03	
4:36:31	13:10:09	-1.41	-1.52	-0.03	
4:37:01	13:10:39	-1.41	-1.51	-0.03	
4:37:31	13:11:09	-1.41	-1.51	-0.04	
4:38:01	13:11:39	-1.41	-1.51	-0.03	
4:38:31	13:12:09	-1.41	-1.51	-0.03	
4:39:01	13:12:39	-1.41	-1.51	-0.03	
4:39:31	13:13:09	-1.41	-1.50	-0.03	
4:40:01	13:13:39	-1.41	-1.50	-0.03	
4:40:31	13:14:09	-1.41	-1.50	-0.02	
4:41:01	13:14:39	-1.41	-1.50	-0.03	
4:41:31	13:15:09	-1.41	-1.51	-0.02	
4:42:01	13:15:39	-1.41	-1.51	-0.02	
4:42:31	13:16:09	-1.41	-1.50	-0.03	
4:43:01	13:16:39	-1.41	-1.50	-0.03	
4:43:31	13:17:09	-1.41	-1.50	-0.03	
4:44:01	13:17:39	-1.41	-1.49	-0.03	
4:44:31	13:18:09	-1.41	-1.49	-0.04	
4:45:05	13:18:42	-1.41	-1.50	-0.04	
4:45:31	13:19:09	-1.41	-1.50	-0.03	
4:46:01	13:19:39	-1.41	-1.50	-0.03	
4:46:31	13:20:09	-1.41	-1.50	-0.03	
4:47:01	13:20:39	-1.41	-1.50	-0.02	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:47:31	13:21:09	-1.41	-1.47	-0.03	
4:48:01	13:21:39	-1.41	-1.45	-0.03	
4:48:31	13:22:09	-1.41	-1.45	-0.02	
4:49:01	13:22:39	-1.41	-1.45	-0.02	
4:49:31	13:23:09	-1.41	-1.44	-0.02	
4:50:01	13:23:39	-1.41	-1.44	-0.03	
4:50:31	13:24:09	-1.41	-1.44	-0.02	
4:51:01	13:24:39	-1.41	-1.44	-0.02	
4:51:32	13:25:09	-1.41	-1.44	-0.02	
4:52:01	13:25:39	-1.41	-1.44	-0.02	
4:52:31	13:26:09	-1.41	-1.45	-0.02	
4:53:01	13:26:39	-1.41	-1.46	-0.02	
4:53:31	13:27:09	-1.41	-1.44	-0.02	
4:54:01	13:27:39	-1.41	-1.43	-0.02	
4:54:31	13:28:09	-1.41	-1.43	-0.02	
4:55:01	13:28:39	-1.41	-1.43	-0.02	
4:55:31	13:29:09	-1.41	-1.43	-0.02	
4:56:01	13:29:39	-1.41	-1.43	-0.02	
4:56:31	13:30:09	-1.41	-1.44	-0.02	
4:57:01	13:30:39	-1.41	-1.44	-0.01	
4:57:31	13:31:09	-1.41	-1.43	-0.01	
4:58:01	13:31:39	-1.41	-1.44	-0.01	
4:58:31	13:32:09	-1.41	-1.44	-0.01	
4:59:01	13:32:39	-1.41	-1.43	-0.01	
4:59:31	13:33:09	-1.41	-1.41	-0.01	
5:00:01	13:33:39	-1.41	-1.41	0.00	
5:00:31	13:34:09	-1.41	-1.40	-0.01	
5:01:01	13:34:39	-1.41	-1.41	-0.01	
5:01:31	13:35:09	-1.41	-1.41	-0.01	
5:02:02	13:35:39	-1.41	-1.42	0.00	
5:02:31	13:36:09	-1.41	-1.40	-0.01	
5:03:01	13:36:39	-1.41	-1.40	0.00	
5:03:31	13:37:09	-1.41	-1.40	-0.01	
5:04:01	13:37:39	-1.41	-1.40	-0.01	
5:04:32	13:38:10	-1.41	-1.40	-0.01	
5:05:01	13:38:39	-1.41	-1.40	-0.01	
5:05:32	13:39:09	-1.41	-1.40	-0.01	
5:06:01	13:39:39	-1.41	-1.40	-0.01	
5:06:31	13:40:09	-1.41	-1.41	-0.01	
5:07:01	13:40:39	-1.41	-1.40	-0.02	
5:07:31	13:41:09	-1.41	-1.39	-0.01	
5:08:01	13:41:39	-1.41	-1.40	-0.01	
5:08:32	13:42:09	-1.41	-1.41	-0.01	
5:09:01	13:42:39	-1.41	-1.40	-0.02	
5:09:31	13:43:09	-1.41	-1.39	-0.01	
5:10:01	13:43:39	-1.41	-1.39	-0.01	

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
5:10:31	13:44:09	-1.41	-1.40	-0.01	
5:11:01	13:44:39	-1.41	-1.40	-0.01	
5:11:31	13:45:09	-1.41	-1.41	-0.02	
5:12:02	13:45:39	-1.41	-1.40	-0.01	
5:12:31	13:46:09	-1.41	-1.40	-0.01	
5:13:01	13:46:39	-1.41	-1.40	-0.01	
5:13:31	13:47:09	-1.41	-1.39	-0.01	
5:14:01	13:47:39	-1.41	-1.39	0.00	
5:14:31	13:48:09	-1.41	-1.39	-0.01	
5:15:02	13:48:39	-1.41	-1.39	-0.01	
5:15:31	13:49:09	-1.41	-1.38	-0.01	
5:16:01	13:49:39	-1.41	-1.38	0.00	
5:16:32	13:50:09	-1.41	-1.38	-0.01	
5:17:02	13:50:39	-1.41	-1.38	-0.01	
5:17:32	13:51:09	-1.41	-1.37	-0.01	
5:18:02	13:51:39	-1.41	-1.37	-0.01	
5:18:32	13:52:09	-1.41	-1.38	-0.01	
5:19:02	13:52:39	-1.41	-1.37	0.00	
5:19:32	13:53:09	-1.41	-1.38	-0.01	
5:20:02	13:53:39	-1.41	-1.38	-0.01	
5:20:32	13:54:09	-1.41	-1.39	-0.01	
5:21:02	13:54:39	-1.41	-1.40	-0.01	
5:21:32	13:55:09	-1.41	-1.40	-0.01	
5:22:02	13:55:39	-1.41	-1.39	0.00	
5:22:32	13:56:09	-1.41	-1.39	-0.01	
5:23:02	13:56:39	-1.41	-1.37	-0.01	
5:23:32	13:57:09	-1.41	-1.34	-0.01	
5:24:02	13:57:39	-1.41	-1.36	0.00	
5:24:32	13:58:09	-1.41	-1.37	-0.01	
5:25:02	13:58:39	-1.41	-1.37	-0.01	
5:25:32	13:59:09	-1.41	-1.38	0.00	
5:26:02	13:59:39	-1.41	-1.38	0.00	
5:26:32	14:00:09	-1.41	-1.38	0.00	
5:27:02	14:00:39	-1.41	-1.37	0.00	
5:27:32	14:01:09	-1.41	-1.37	-0.01	
5:28:02	14:01:39	-1.41	-1.38	-0.01	
5:28:32	14:02:09	-1.41	-1.38	0.00	
5:29:02	14:02:39	-1.41	-1.39	0.01	
5:29:32	14:03:09	-1.41	-1.40	-0.01	
5:30:02	14:03:39	-1.41	-1.40	-0.01	
5:30:32	14:04:09	-1.41	-1.40	0.00	
5:31:02	14:04:39	-1.41	-1.41	0.00	
5:31:32	14:05:09	-1.41	-1.42	0.00	
5:32:02	14:05:39	-1.41	-1.44	0.00	
5:32:32	14:06:09	-1.41	-1.45	-0.01	
5:33:02	14:06:39	-1.41	-1.46	0.00	

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
5:33:32	14:07:09	-1.41	-1.47	-0.01	
5:34:02	14:07:39	-1.41	-1.48	0.00	
5:34:32	14:08:09	-1.41	-1.48	-0.01	
5:35:02	14:08:39	-1.41	-1.49	0.00	
5:35:32	14:09:09	-1.41	-1.49	-0.01	
5:36:02	14:09:39	-1.41	-1.49	-0.01	
5:36:32	14:10:09	-1.41	-1.50	-0.01	
5:37:02	14:10:39	-1.41	-1.52	-0.01	
5:37:32	14:11:09	-1.41	-1.52	-0.01	
5:38:02	14:11:39	-1.41	-1.52	0.00	
5:38:32	14:12:09	-1.41	-1.51	0.01	
5:39:02	14:12:39	-1.41	-1.49	0.00	
5:39:32	14:13:09	-1.41	-1.49	0.00	
5:40:02	14:13:39	-1.41	-1.50	-0.01	
5:40:32	14:14:09	-1.41	-1.51	-0.01	
5:41:02	14:14:39	-1.41	-1.51	-0.01	
5:41:32	14:15:09	-1.41	-1.51	-0.01	
5:42:02	14:15:39	-1.41	-1.51	-0.01	
5:42:32	14:16:09	-1.41	-1.51	-0.01	
5:43:02	14:16:39	-1.41	-1.52	-0.02	
5:43:32	14:17:09	-1.41			
5:44:02	14:17:39	-1.41			
5:44:32	14:18:09	-1.41			
5:45:02	14:18:39	-1.41			
5:45:32	14:19:09	-1.41			
5:46:02	14:19:39	-1.41			
5:46:32	14:20:09	-1.41			
5:47:02	14:20:39	-1.41			
5:47:32	14:21:09	-1.41			
5:48:02	14:21:39	-1.41			
5:48:32	14:22:09	-1.41			
5:49:02	14:22:39	-1.41			END SVE until sampling canisters available
5:49:32	14:23:09	-1.41			
5:50:02	14:23:39	-1.41			
5:50:32	14:24:09	-1.41			
5:51:02	14:24:39	-1.16			
5:51:32	14:25:09	-0.97			
5:52:02	14:25:39	-0.73			
5:52:32	14:26:09	-0.66			
5:53:02	14:26:39	-0.55			
5:53:32	14:27:09	-0.48			
5:54:02	14:27:39	-0.45			
5:54:32	14:28:09	-0.38			
5:55:02	14:28:39	-0.42			
5:55:32	14:29:09	-0.40			
5:56:02	14:29:39	-0.33			

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
5:56:32	14:30:09	-0.36			
5:57:02	14:30:39	-0.37			
5:57:32	14:31:09	-0.33			
5:58:02	14:31:39	-0.31			
5:58:32	14:32:09	-0.31			
5:59:02	14:32:39	-0.33			
5:59:32	14:33:09	-0.32			
6:00:02	14:33:39	-0.34			
6:00:32	14:34:09	-0.29			
6:01:02	14:34:39	-0.32			
6:01:32	14:35:09	-0.34			
6:02:02	14:35:39	-0.29			
6:02:32	14:36:09	-0.31			
6:03:02	14:36:39	-0.30			
6:03:32	14:37:09	-0.32			
6:04:02	14:37:39	-0.32			
6:04:32	14:38:09	-0.32			
6:05:02	14:38:39	-0.32			
6:05:32	14:39:09	-0.32			
6:06:02	14:39:39	-0.31			
6:06:32	14:40:09	-0.31			
6:07:02	14:40:39	-0.28			
6:07:32	14:41:09	-0.32			
6:08:02	14:41:39	-0.31			
6:08:32	14:42:09	-0.31			
6:09:02	14:42:39	-0.29			
6:09:32	14:43:09	-0.29			
6:10:02	14:43:39	-0.29			
6:10:32	14:44:09	-0.27			
6:11:02	14:44:39	-0.29			
6:11:32	14:45:09	-0.29			
6:12:02	14:45:39	-0.28			
6:12:32	14:46:09	-0.32			
6:13:02	14:46:39	-0.28			
6:13:32	14:47:09	-0.29			
6:14:02	14:47:39	-0.28			
6:14:32	14:48:09	-0.29			
6:15:02	14:48:39	-0.28			
6:15:32	14:49:09	-0.31			
6:16:02	14:49:39	-0.28			
6:16:32	14:50:09	-0.29			
6:17:02	14:50:39	-0.28			
6:17:32	14:51:09	-0.33			
6:18:02	14:51:39	-0.30			
6:18:32	14:52:09	-0.27			
6:19:02	14:52:39	-0.26			

VEGE Study Data

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ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
6:19:32	14:53:09	-0.26			
6:20:02	14:53:39	-0.28			
6:20:32	14:54:09	-0.30			
6:21:02	14:54:39	-0.32			
6:21:32	14:55:09	-0.28			
6:22:02	14:55:39	-0.27			
6:22:32	14:56:09	-0.27			
6:23:02	14:56:39	-0.26			
6:23:32	14:57:09	-0.21			
6:24:02	14:57:39	-0.25			
6:24:32	14:58:09	-0.24			
6:25:02	14:58:39	-0.21			
6:25:32	14:59:09	-0.26			
6:26:02	14:59:39	-0.23			
6:26:32	15:00:09	-0.25			
6:27:02	15:00:39	-0.26			
6:27:32	15:01:09	-0.26			
6:28:02	15:01:39	-0.27			
6:28:32	15:02:09	-0.24			
6:29:02	15:02:39	-0.24			
6:29:32	15:03:09	-0.26			
6:30:02	15:03:39	-0.26			
6:30:32	15:04:10	-0.22			
6:31:02	15:04:39	-0.20			
6:31:32	15:05:09	-0.24			
6:32:02	15:05:39	-0.20			
6:32:32	15:06:09	-0.23			
6:33:02	15:06:39	-0.24			
6:33:32	15:07:09	-0.19			
6:34:02	15:07:39	-0.24			
6:34:32	15:08:09	-0.21			
6:35:02	15:08:39	-0.22			
6:35:32	15:09:09	-0.24			
6:36:02	15:09:39	-0.20			
6:36:32	15:10:09	-0.20			
6:37:04	15:10:41	-0.24			
6:37:32	15:11:09	-0.19			
6:38:02	15:11:39	-0.23			
6:38:32	15:12:09	-0.22			
6:39:02	15:12:39	-0.22			
6:39:32	15:13:09	-0.23			
6:40:02	15:13:39	-0.23			
6:40:32	15:14:09	-0.23			
6:41:02	15:14:39	-0.21			
6:41:32	15:15:09	-0.24			
6:42:02	15:15:39	-0.21			

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
6:42:32	15:16:09	-0.20			
6:43:02	15:16:39	-0.22			
6:43:32	15:17:09	-0.25			
6:44:02	15:17:39	-0.21			
6:44:32	15:18:09	-10.08			
6:45:02	15:18:39	-0.19			
6:45:36	15:19:14	-0.20			
6:46:02	15:19:39	-0.20			
6:46:32	15:20:09	-0.20			
6:47:02	15:20:39	-0.17			
6:47:32	15:21:09	-0.20			
6:48:02	15:21:39	-0.20			
6:48:32	15:22:09	-0.21			
6:49:02	15:22:39	-0.21			
6:49:32	15:23:09	-0.18			
6:50:02	15:23:39	-0.18			
6:50:32	15:24:09	-0.20			
6:51:02	15:24:39	-0.19			
6:51:32	15:25:09	-0.22			
6:52:02	15:25:39	-0.16			
6:52:32	15:26:09	-0.22			
6:53:02	15:26:39	-0.17			
6:53:32	15:27:09	-0.17			
6:54:02	15:27:39	-0.19			
6:54:32	15:28:09	-0.18			
6:55:02	15:28:39	-0.19			
6:55:32	15:29:09	-0.16			
6:56:02	15:29:39	-0.15			
6:56:32	15:30:09	-0.18			
6:57:02	15:30:39	-0.20			
6:57:32	15:31:09	-0.19			
6:58:02	15:31:39	-0.17			
6:58:32	15:32:09	-0.16			
6:59:02	15:32:39	-0.15			
6:59:32	15:33:09	-0.18			
7:00:02	15:33:39	-0.18			
7:00:32	15:34:09	-0.17			
7:01:02	15:34:39	-0.18			
7:01:32	15:35:09	-0.18			
7:02:02	15:35:39	-1.06			
7:02:32	15:36:09	0.05			
7:03:02	15:36:39	-0.12			
7:03:32	15:37:09	-0.20			
7:04:02	15:37:39	-0.17			
7:04:32	15:38:09	-0.17			
7:05:02	15:38:39	-0.17			

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

ELAPSED TIME hh/mm/ss	Time	RADIO 2 (Extraction Well)	RADIO 3		COMMENTS
		RW-1	MW-1		
		L.L. Change - = ↓ + = ↑	L.L. Change - = ↓ + = ↑	VAC in w.c.	
7:05:32	15:39:09	-0.17			
7:06:02	15:39:39	-0.17			
7:06:32	15:40:09	0.16			
7:07:02	15:40:39	-0.11			
7:07:32	15:41:09	-0.10			
7:08:02	15:41:39	-0.13			
7:08:32	15:42:09	-0.04			
7:09:02	15:42:39	-0.10			
7:09:32	15:43:09	-0.11			
7:10:02	15:43:39	-0.09			
7:10:32	15:44:09	-0.08			
7:11:02	15:44:39	-0.13			
7:11:32	15:45:09	0.11			
7:12:02	15:45:39	-0.05			
7:12:32	15:46:09	-0.11			
7:13:02	15:46:39	0.53			
7:13:32	15:47:09	-0.08			
7:14:02	15:47:39	-0.04			
7:14:32	15:48:09	-0.08			
7:15:02	15:48:39	-0.04			
7:15:32	15:49:09	-0.05			
7:16:02	15:49:39	0.00			
7:16:32	15:50:09	0.00			
7:17:02	15:50:39	0.01			
7:17:32	15:51:09	0.00			
7:18:02	15:51:39	0.94			
7:18:32	15:52:09	0.27			
7:19:02	15:52:39	0.12			
7:19:32	15:53:09	0.14			
7:20:02	15:53:40	0.08			
7:20:32	15:54:10	-0.03			
7:21:02	15:54:40	-1.41			
7:21:32	15:55:10	-0.69			
7:22:02	15:55:40	-0.45			
7:22:32	15:56:10	0.17			
7:23:02	15:56:40	0.08			
7:23:32	15:57:10	0.14			
7:24:02	15:57:40	0.19			
7:24:32	15:58:10	0.22			
7:25:02	15:58:40	0.22			
7:25:32	15:59:10	0.23			
					end all sampling and test

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c	L.L. Change - = ↓ + = ↑	VAC in w.c	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:00:00	8:33:37	0.00	0.00	0.00	0.00	0.00	0.00	
0:00:30	8:34:07	0.00	0.00	0.00	0.01	-0.01	0.00	
0:01:00	8:34:37	0.00	0.00	0.00	0.00	0.00	0.00	
0:01:30	8:35:07	0.00	0.00	0.01	-0.01	-0.01	0.00	
0:02:00	8:35:37	0.00	0.00	0.01	0.01	-0.01	0.01	
0:02:30	8:36:07	0.00	0.00	0.01	0.00	-0.01	0.01	
0:03:00	8:36:37	0.00	0.00	0.00	0.01	-0.01	0.02	
0:03:30	8:37:07	0.00	0.00	-0.01	0.01	-0.01	0.02	
0:04:00	8:37:37	0.00	0.00	0.00	0.02	-0.01	0.03	
0:04:30	8:38:07	0.00	0.00	0.00	0.01	-0.01	0.03	
0:05:00	8:38:37	0.00	0.00	0.00	0.01	-0.01	0.03	
0:05:30	8:39:07	0.00	0.01	0.00	0.00	-0.01	0.03	
0:06:00	8:39:37	0.00	0.00	0.00	0.01	-0.01	0.03	
0:06:30	8:40:07	0.00	0.01	0.00	0.01	-0.02	0.04	Begin pumping down RW-1
0:07:00	8:40:37	0.00	0.01	0.00	0.01	-0.02	0.03	
0:07:30	8:41:07	0.00	0.02	0.00	0.02	-0.02	0.04	
0:08:00	8:41:37	0.00	0.02	0.00	0.01	-0.02	0.05	
0:08:30	8:42:07	0.00	0.01	0.00	0.01	-0.02	0.05	
0:09:00	8:42:37	-0.01	0.01	0.00	0.02	-0.03	0.05	
0:09:30	8:43:07	0.00	0.02	0.00	0.01	-0.03	0.04	
0:10:00	8:43:37	0.00	0.01	-0.01	0.02	-0.03	0.04	
0:10:30	8:44:07	0.00	0.00	0.00	0.00	-0.03	0.05	
0:11:00	8:44:37	0.00	0.01	0.00	0.06	-0.01	0.05	
0:11:30	8:45:07	0.00	0.02	0.00	0.00	-0.02	0.05	
0:12:00	8:45:37	-0.01	0.02	0.00	0.01	-0.01	0.05	
0:12:30	8:46:07	-0.02	0.01	0.00	0.01	-0.02	0.05	
0:14:01	8:47:38	-0.02	0.02	0.00	0.02	-0.02	0.05	
0:14:01	8:47:38	-0.02	0.01	0.00	-0.01	-0.03	0.05	
0:14:30	8:48:07	-0.01	0.02	0.00	-0.03	-0.03	0.05	
0:15:00	8:48:37	-0.01	0.01	0.00	0.02	-0.03	0.05	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:15:30	8:49:07	-0.01	0.02	0.00	0.02	-0.03	0.05	
0:16:00	8:49:37	-0.01	0.02	0.00	0.00	-0.03	0.05	
0:16:30	8:50:07	-0.02	0.02	0.00	0.02	-0.03	0.05	
0:17:00	8:50:37	-0.01	0.01	0.00	0.02	-0.03	0.05	
0:17:30	8:51:08	-0.01	0.01	0.00	0.01	-0.03	0.06	
0:18:00	8:51:37	-0.01	0.02	0.00	0.00	-0.03	0.05	
0:18:30	8:52:07	-0.01	0.02	0.00	0.02	-0.03	0.05	
0:19:00	8:52:38	-0.02	0.02	0.00	0.01	-0.03	0.05	
0:19:30	8:53:07	-0.01	0.02	0.01	0.01	-0.03	0.06	
0:20:00	8:53:37	-0.01	0.02	0.00	0.02	-0.03	0.06	
0:20:30	8:54:08	-0.01	0.01	0.00	0.02	-0.03	0.05	
0:21:00	8:54:37	-0.01	0.01	0.00	0.02	-0.03	0.06	
0:21:30	8:55:07	-0.01	0.03	0.00	0.05	-0.03	0.05	
0:22:00	8:55:37	-0.01	0.02	0.00	0.01	-0.03	0.06	
0:22:30	8:56:07	-0.02	0.02	0.00	0.01	-0.04	0.06	
0:23:00	8:56:37	-0.01	0.02	0.00	0.01	-0.04	0.06	
0:23:30	8:57:08	-0.01	0.02	0.00	0.01	-0.04	0.05	
0:24:00	8:57:37	-0.01	0.02	0.00	0.00	-0.04	0.06	
0:24:30	8:58:07	-0.01	0.02	0.00	0.01	-0.04	0.05	
0:25:00	8:58:37	-0.01	0.03	0.00	0.00	-0.04	0.06	
0:25:30	8:59:07	-0.01	0.02	0.00	0.01	-0.04	0.07	
0:26:00	8:59:37	-0.01	0.02	0.00	0.00	-0.04	0.06	
0:26:30	9:00:08	0.00	0.02	0.00	0.00	-0.05	0.06	
0:27:00	9:00:38	0.00	0.02	0.00	0.01	-0.04	0.06	
0:27:30	9:01:08	0.00	0.02	0.00	0.01	-0.05	0.06	Begin VEGE 707 blower
0:28:00	9:01:38	0.00	0.02	0.00	0.00	-0.05	0.06	
0:28:30	9:02:08	-0.01	0.02	0.00	0.00	-0.05	0.07	
0:29:00	9:02:38	-0.01	0.01	0.00	0.00	-0.05	0.06	
0:32:53	9:06:30	-0.01	0.02	0.00	0.00	-0.05	0.06	
0:32:53	9:06:30	-0.01	0.02	-0.01	-0.01	-0.05	0.06	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:33:00	9:06:38	-0.01	0.02	-0.01	0.00	-0.05	0.06	
0:33:30	9:07:08	-0.01	0.02	-0.01	0.00	-0.04	0.06	Begin step 1 @41" WC
0:34:00	9:07:38	-0.02	0.02	0.00	0.00	-0.04	0.06	
0:34:30	9:08:08	-0.01	0.02	0.00	0.00	-0.05	0.07	
0:35:00	9:08:38	-0.02	0.01	-0.01	-0.01	-0.05	0.06	
0:35:30	9:09:08	-0.01	0.02	-0.01	-0.01	-0.05	0.06	
0:36:00	9:09:38	-0.02	0.02	-0.02	0.00	-0.05	0.06	
0:36:30	9:10:08	-0.02	0.01	-0.01	-0.01	-0.06	0.06	
0:37:00	9:10:38	-0.01	0.00	-0.02	0.00	-0.06	0.06	
0:37:30	9:11:08	-0.01	0.02	-0.02	-0.01	-0.07	0.06	
0:38:00	9:11:38	-0.02	0.03	-0.02	-0.01	-0.06	0.05	
0:38:30	9:12:08	-0.02	0.03	-0.02	0.00	-0.06	0.07	
0:39:00	9:12:38	-0.01	0.02	-0.02	0.00	-0.05	0.06	
0:39:30	9:13:08	-0.02	0.02	-0.03	-0.01	-0.05	0.06	
0:40:00	9:13:38	-0.02	0.03	-0.02	-0.01	-0.05	0.07	
0:40:30	9:14:08	-0.02	0.03	-0.02	-0.01	-0.06	0.06	
0:41:00	9:14:38	-0.01	0.03	-0.01	0.03	-0.07	0.07	
0:41:30	9:15:08	-0.02	0.02	-0.02	-0.01	-0.07	0.06	
0:42:00	9:15:38	-0.03	0.03	-0.03	0.00	-0.07	0.07	
0:42:30	9:16:08	-0.01	0.02	-0.02	-0.01	-0.07	0.07	
0:43:00	9:16:38	-0.02	0.03	-0.01	-0.01	-0.07	0.06	
0:43:30	9:17:08	-0.02	0.03	-0.02	-0.02	-0.07	0.06	
0:44:00	9:17:38	-0.01	0.03	-0.01	0.00	-0.08	0.06	
0:44:30	9:18:08	-0.01	0.02	-0.01	-0.01	-0.08	0.06	
0:45:00	9:18:38	-0.02	0.02	-0.02	-0.01	-0.08	0.06	
0:45:30	9:19:08	-0.01	0.03	-0.02	0.00	-0.08	0.06	
0:46:00	9:19:38	-0.01	0.03	-0.02	-0.01	-0.08	0.05	
0:46:30	9:20:08	-0.02	0.03	-0.02	-0.01	-0.08	0.05	
0:47:00	9:20:38	-0.01	0.03	-0.02	-0.01	-0.08	0.05	
0:47:30	9:21:08	-0.01	0.03	-0.03	-0.01	-0.08	0.04	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
0:48:40	9:22:18	-0.02	0.02	-0.03	-0.01	-0.08	0.04	
0:49:00	9:22:38	-0.02	0.02	-0.03	0.00	-0.08	0.04	
0:49:30	9:23:08	-0.01	0.03	-0.03	-0.01	-0.08	0.03	
0:50:00	9:23:38	-0.02	0.03	-0.03	-0.01	-0.08	0.03	
0:50:30	9:24:08	-0.02	0.03	-0.03	-0.02	-0.08	0.02	
0:51:00	9:24:38	-0.02	0.03	-0.03	-0.01	-0.08	0.01	
0:51:30	9:25:08	-0.02	0.03	-0.03	-0.01	-0.08	0.02	
0:52:00	9:25:38	-0.01	0.03	-0.03	-0.01	-0.08	0.01	
0:52:30	9:26:08	-0.02	0.03	-0.03	-0.01	-0.08	0.01	
0:53:00	9:26:38	-0.02	0.03	-0.02	0.00	-0.08	0.00	
0:53:30	9:27:08	-0.01	0.03	-0.03	-0.01	-0.08	-0.01	
0:54:00	9:27:38	-0.02	0.03	-0.03	-0.01	-0.08	-0.01	
0:54:30	9:28:08	-0.01	0.03	-0.02	-0.01	-0.08	0.00	
0:55:00	9:28:38	-0.01	0.03	-0.03	-0.01	-0.09	-0.01	
0:55:30	9:29:08	-0.02	0.03	-0.03	-0.01	-0.09	-0.01	
0:56:00	9:29:38	-0.02	0.03	-0.03	0.00	-0.10	-0.01	
0:56:30	9:30:08	-0.03	0.03	-0.03	-0.01	-0.10	-0.01	
0:57:00	9:30:38	-0.03	0.03	-0.03	-0.02	-0.10	0.00	
0:57:30	9:31:08	-0.03	0.03	-0.02	-0.02	-0.10	-0.01	
0:58:00	9:31:38	-0.03	0.03	-0.03	-0.01	-0.10	0.00	
0:58:30	9:32:08	-0.03	0.04	-0.03	-0.01	-0.10	0.00	
0:59:00	9:32:38	-0.02	0.03	-0.03	-0.02	-0.10	-0.01	
0:59:30	9:33:08	-0.01	0.03	-0.03	-0.02	-0.10	-0.01	
1:00:00	9:33:38	-0.02	0.03	-0.02	-0.01	-0.09	-0.01	
1:00:30	9:34:08	-0.02	0.02	-0.02	-0.01	-0.08	-0.01	
1:01:00	9:34:38	-0.02	0.03	-0.02	0.01	-0.09	-0.02	
1:01:30	9:35:08	-0.02	0.03	-0.03	-0.01	-0.09	-0.01	
1:02:00	9:35:38	-0.02	0.04	-0.03	-0.02	-0.10	-0.01	
1:02:30	9:36:08	-0.02	0.04	-0.03	-0.01	-0.10	0.00	
1:03:00	9:36:38	-0.02	0.03	-0.03	-0.01	-0.10	-0.01	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:03:30	9:37:08	-0.03	0.03	-0.03	-0.01	-0.10	-0.01	
1:04:00	9:37:38	-0.02	0.03	-0.02	-0.02	-0.10	-0.01	
1:04:30	9:38:08	-0.02	0.03	-0.03	-0.01	-0.10	-0.01	
1:05:00	9:38:38	-0.02	0.04	-0.03	-0.02	-0.10	-0.01	
1:05:31	9:39:08	-0.02	0.04	-0.03	-0.02	-0.10	-0.01	
1:06:00	9:39:38	-0.03	0.04	-0.03	-0.02	-0.10	-0.01	
1:06:30	9:40:08	-0.02	0.03	-0.03	-0.02	-0.10	-0.01	
1:07:00	9:40:38	-0.02	0.03	-0.03	-0.01	-0.10	-0.02	
1:07:30	9:41:08	-0.02	0.03	-0.03	0.00	-0.09	-0.01	
1:08:00	9:41:38	-0.02	0.04	-0.03	-0.01	-0.09	-0.01	
1:08:30	9:42:08	-0.03	0.03	-0.03	-0.02	-0.09	-0.01	
1:09:00	9:42:38	-0.03	0.04	-0.04	-0.01	-0.10	-0.01	
1:09:30	9:43:08	-0.03	0.03	-0.03	-0.01	-0.10	-0.01	
1:10:00	9:43:38	-0.03	0.04	-0.03	-0.01	-0.10	-0.01	
1:10:30	9:44:08	-0.02	0.03	-0.03	-0.01	-0.09	0.00	
1:11:00	9:44:38	-0.02	0.03	-0.03	-0.02	-0.09	-0.01	
1:11:30	9:45:08	-0.02	0.03	-0.03	-0.01	-0.09	-0.01	
1:12:00	9:45:38	-0.02	0.03	-0.03	-0.01	-0.09	0.00	
1:12:30	9:46:08	-0.03	0.03	-0.03	0.00	-0.09	-0.01	
1:13:00	9:46:38	-0.02	0.04	-0.03	-0.02	-0.09	-0.01	
1:13:30	9:47:08	-0.03	0.03	-0.03	-0.02	-0.09	0.00	
1:14:00	9:47:38	-0.03	0.03	-0.03	-0.02	-0.10	0.00	
1:14:30	9:48:08	-0.03	0.02	-0.04	-0.01	-0.11	0.00	
1:15:00	9:48:38	-0.03	0.03	-0.03	-0.02	-0.09	0.00	
1:15:30	9:49:08	-0.03	0.03	-0.03	-0.01	-0.09	0.00	
1:16:00	9:49:38	-0.03	0.04	-0.03	-0.02	-0.10	-0.01	
1:16:30	9:50:08	-0.03	0.03	-0.02	-0.01	-0.09	0.00	
1:17:00	9:50:38	-0.03	0.04	-0.03	-0.01	-0.10	0.01	
1:17:30	9:51:08	-0.03	0.03	-0.03	-0.01	-0.11	0.00	
1:18:00	9:51:38	-0.03	0.03	-0.03	-0.02	-0.10	0.00	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:18:30	9:52:08	-0.03	0.03	-0.02	-0.01	-0.09	0.00	
1:28:57	10:02:34	-0.03	0.03	-0.03	-0.02	-0.09	0.01	
1:28:59	10:02:36	-0.03	0.02	-0.03	-0.02	-0.11	0.01	
1:29:00	10:02:38	-0.03	0.04	-0.04	-0.01	-0.11	0.01	
1:29:02	10:02:39	-0.03	0.04	-0.03	-0.01	-0.11	0.02	
1:29:02	10:02:40	-0.03	0.04	-0.03	-0.01	-0.09	0.01	
1:29:30	10:03:08	-0.03	0.04	-0.03	-0.01	-0.10	0.01	
1:30:00	10:03:38	-0.03	0.04	-0.03	-0.02	-0.09	0.01	
1:30:30	10:04:08	-0.03	0.03	-0.03	-0.01	-0.10	0.01	
1:31:00	10:04:38	-0.03	0.04	-0.03	-0.01	-0.10	0.02	
1:31:30	10:05:08	-0.03	0.04	-0.02	-0.01	-0.09	0.01	
1:32:00	10:05:38	-0.03	0.04	-0.03	-0.01	-0.10	0.01	
1:32:30	10:06:08	-0.04	0.04	-0.03	-0.01	-0.11	0.01	
1:33:00	10:06:38	-0.03	0.03	-0.04	-0.01	-0.11	0.02	
1:33:30	10:07:08	-0.03	0.04	-0.03	0.00	-0.11	0.01	
1:34:00	10:07:38	-0.03	0.04	-0.03	-0.02	-0.11	0.01	
1:34:30	10:08:08	-0.03	0.03	-0.03	-0.01	-0.11	0.01	
1:35:00	10:08:38	-0.03	0.03	-0.03	-0.01	-0.11	0.02	
1:35:30	10:09:08	-0.03	0.04	-0.03	-0.01	-0.11	0.02	
1:36:00	10:09:38	-0.03	0.03	-0.03	-0.02	-0.11	0.02	
1:36:30	10:10:08	-0.03	0.04	-0.03	-0.02	-0.11	0.01	Begin step 2 max vac with 707 blower
1:37:00	10:10:38	-0.03	0.03	-0.03	0.00	-0.11	0.01	
1:37:30	10:11:08	-0.03	0.04	-0.03	-0.01	-0.11	0.02	
1:38:00	10:11:38	-0.03	0.03	-0.03	-0.01	-0.11	0.02	
1:38:31	10:12:08	-0.03	0.03	-0.03	0.00	-0.11	0.02	
1:39:01	10:12:38	-0.03	0.03	-0.03	-0.02	-0.11	0.02	
1:39:30	10:13:08	-0.03	0.04	-0.03	-0.01	-0.11	0.02	
1:40:00	10:13:38	-0.03	0.03	-0.03	-0.01	-0.11	0.02	
1:40:30	10:14:08	-0.05	0.03	-0.04	-0.01	-0.11	0.02	
1:41:00	10:14:38	-0.03	0.03	-0.04	-0.01	-0.11	0.02	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:41:30	10:15:08	-0.03	0.04	-0.03	0.00	-0.11	0.02	
1:42:00	10:15:38	-0.03	0.03	-0.03	-0.01	-0.11	0.02	
1:42:30	10:16:08	-0.03	0.04	-0.03	0.00	-0.11	0.02	
1:43:00	10:16:38	-0.05	0.04	-0.04	-0.04	-0.11	0.01	
1:43:31	10:17:08	-0.05	0.04	-0.04	-0.01	-0.11	0.02	
1:44:16	10:17:54	-0.03	0.03	-0.04	-0.01	-0.11	0.02	
1:44:30	10:18:08	-0.03	0.04	-0.04	0.00	-0.11	0.02	
1:45:00	10:18:38	-0.04	0.04	-0.04	0.01	-0.10	0.02	
1:45:30	10:19:08	-0.04	0.05	-0.04	0.00	-0.10	0.02	
1:46:00	10:19:38	-0.04	0.03	-0.04	0.00	-0.10	0.02	
1:46:30	10:20:08	-0.03	0.05	-0.04	0.00	-0.10	0.01	
1:47:01	10:20:38	-0.03	0.05	-0.04	-0.01	-0.10	0.01	
1:47:31	10:21:08	-0.05	0.04	-0.04	-0.01	-0.10	0.01	
1:48:01	10:21:38	-0.03	0.04	-0.04	0.00	-0.10	0.01	
1:48:31	10:22:08	-0.03	0.06	-0.04	0.01	-0.10	0.01	
1:49:01	10:22:38	-0.03	0.04	-0.04	-0.01	-0.10	0.01	
1:49:31	10:23:08	-0.03	0.05	-0.04	0.02	-0.10	0.01	
1:50:01	10:23:38	-0.03	0.05	-0.04	-0.01	-0.10	0.01	
1:50:31	10:24:08	-0.03	0.05	-0.04	-0.02	-0.09	0.00	
1:51:01	10:24:38	-0.03	0.04	-0.04	-0.01	-0.09	0.00	
1:51:31	10:25:08	-0.03	0.05	-0.04	-0.02	-0.09	-0.01	
1:52:01	10:25:38	-0.03	0.05	-0.04	-0.01	-0.09	0.00	
1:52:31	10:26:08	-0.03	0.06	-0.04	-0.02	-0.09	0.00	
1:53:01	10:26:38	-0.03	0.06	-0.03	-0.01	-0.09	-0.01	
1:53:31	10:27:08	-0.03	0.06	-0.04	-0.01	-0.09	-0.01	
1:54:01	10:27:38	-0.03	0.06	-0.04	-0.01	-0.09	-0.01	
1:54:31	10:28:08	-0.03	0.06	-0.03	-0.01	-0.09	0.00	
1:55:01	10:28:38	-0.03	0.06	-0.03	-0.02	-0.09	0.00	
1:55:31	10:29:08	-0.03	0.07	-0.03	-0.02	-0.09	-0.01	
1:56:01	10:29:38	-0.03	0.06	-0.03	-0.01	-0.09	0.00	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
1:56:31	10:30:08	-0.03	0.06	-0.03	-0.01	-0.09	-0.01	
1:57:01	10:30:38	-0.03	0.07	-0.03	-0.01	-0.10	0.00	
1:57:31	10:31:08	-0.03	0.06	-0.03	-0.02	-0.10	0.00	
1:58:02	10:31:39	-0.03	0.07	-0.03	-0.01	-0.10	0.00	
1:58:31	10:32:08	-0.03	0.07	-0.03	-0.01	-0.10	0.00	
1:59:01	10:32:38	-0.03	0.07	-0.04	-0.01	-0.10	0.00	
1:59:31	10:33:08	-0.03	0.07	-0.03	-0.01	-0.10	0.00	
2:00:01	10:33:38	-0.03	0.04	-0.01	-0.03	-0.11	0.00	
2:00:31	10:34:08	-0.03	0.07	-0.03	0.04	-0.10	0.00	
2:01:01	10:34:38	-0.03	0.06	-0.04	0.00	-0.11	0.01	
2:01:31	10:35:08	-0.03	0.07	-0.04	0.00	-0.12	0.00	
2:02:01	10:35:38	-0.04	0.07	-0.02	0.01	-0.12	0.00	
2:02:31	10:36:08	-0.03	0.07	-0.01	-0.01	-0.12	0.00	
2:03:01	10:36:38	-0.03	0.06	-0.04	0.00	-0.12	0.01	
2:03:31	10:37:08	-0.03	0.07	-0.04	-0.01	-0.12	0.01	
2:04:01	10:37:38	-0.03	0.07	-0.03	0.00	-0.12	0.01	
2:04:31	10:38:08	-0.03	0.07	-0.03	0.00	-0.12	0.01	
2:05:01	10:38:38	-0.03	0.07	-0.03	0.00	-0.12	0.01	
2:05:31	10:39:08	-0.03	0.06	-0.04	-0.01	-0.12	0.01	
2:06:01	10:39:38	-0.05	0.05	-0.04	-0.02	-0.12	0.01	
2:06:31	10:40:08	-0.03	0.07	-0.05	0.00	-0.12	0.01	
2:07:01	10:40:38	-0.03	0.07	-0.04	0.01	-0.12	0.00	
2:07:31	10:41:08	-0.05	0.07	-0.04	0.00	-0.12	0.00	
2:08:01	10:41:38	-0.03	0.07	-0.03	0.00	-0.12	0.01	
2:08:31	10:42:08	-0.03	0.07	-0.03	-0.01	-0.12	0.00	
2:09:01	10:42:38	-0.03	0.06	-0.02	-0.01	-0.12	0.00	
2:09:31	10:43:08	-0.03	0.07	-0.03	-0.01	-0.12	0.01	
2:10:01	10:43:38	-0.03	0.07	-0.03	0.00	-0.12	0.01	
2:10:31	10:44:08	-0.05	0.07	-0.02	0.00	-0.12	0.00	
2:11:01	10:44:38	-0.03	0.07	-0.04	0.00	-0.12	0.01	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:11:31	10:45:08	-0.03	0.07	-0.04	0.00	-0.12	0.01	
2:12:01	10:45:38	-0.03	0.07	-0.03	-0.02	-0.12	0.01	
2:12:31	10:46:08	-0.03	0.07	-0.03	0.00	-0.12	0.00	
2:13:01	10:46:38	-0.04	0.07	-0.04	0.00	-0.12	0.00	
2:13:31	10:47:08	-0.05	0.07	-0.04	0.01	-0.12	0.00	
2:14:01	10:47:38	-0.03	0.08	-0.03	-0.01	-0.12	-0.01	
2:14:31	10:48:08	-0.03	0.07	-0.04	0.00	-0.12	0.00	
2:15:01	10:48:38	-0.05	0.07	-0.04	0.00	-0.13	-0.01	
2:15:31	10:49:08	-0.04	0.07	-0.04	0.00	-0.13	0.00	
2:16:01	10:49:38	-0.03	0.07	-0.04	-0.01	-0.14	0.00	
2:16:31	10:50:08	-0.05	0.07	-0.04	0.00	-0.14	0.00	
2:17:01	10:50:38	-0.04	0.07	-0.04	0.00	-0.14	0.00	
2:17:31	10:51:08	-0.03	0.06	-0.03	0.01	-0.14	-0.01	
2:18:01	10:51:38	-0.03	0.07	-0.03	0.00	-0.14	-0.01	
2:18:31	10:52:08	-0.03	0.07	-0.04	0.00	-0.14	-0.01	
2:19:01	10:52:38	-0.05	0.07	-0.04	0.00	-0.14	0.00	
2:19:31	10:53:08	-0.03	0.03	-0.04	0.00	-0.14	-0.01	
2:20:01	10:53:38	-0.03	0.07	-0.03	0.00	-0.14	-0.01	
2:20:31	10:54:08	-0.03	0.07	-0.03	0.00	-0.14	-0.02	
2:21:01	10:54:38	-0.04	0.07	-0.03	0.00	-0.14	-0.01	
2:21:31	10:55:08	-0.05	0.07	-0.03	0.00	-0.14	-0.01	
2:22:01	10:55:38	-0.05	0.05	-0.04	0.01	-0.14	-0.01	
2:22:31	10:56:08	-0.05	0.07	-0.04	-0.01	-0.14	-0.01	
2:23:01	10:56:38	-0.05	0.07	-0.04	0.01	-0.14	-0.01	
2:23:31	10:57:08	-0.05	0.07	-0.04	-0.01	-0.14	0.00	
2:24:01	10:57:38	-0.05	0.07	-0.04	0.00	-0.14	-0.01	
2:24:31	10:58:08	-0.05	0.07	-0.04	0.00	-0.14	-0.02	
2:25:01	10:58:38	-0.05	0.07	-0.03	0.00	-0.14	0.00	
2:25:31	10:59:08	-0.05	0.07	-0.04	-0.01	-0.14	-0.01	
2:26:01	10:59:38	-0.03	0.06	-0.04	-0.01	-0.14	0.00	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:26:31	11:00:08	-0.03	0.07	-0.04	0.00	-0.14	0.00	
2:27:01	11:00:38	-0.05	0.07	-0.04	0.00	-0.14	0.01	
2:27:31	11:01:08	-0.05	0.07	-0.04	0.00	-0.14	0.01	
2:28:01	11:01:38	-0.05	0.07	-0.04	0.00	-0.14	0.01	
2:28:31	11:02:08	-0.05	0.07	-0.04	0.00	-0.14	0.01	
2:29:01	11:02:38	-0.05	0.07	-0.04	-0.01	-0.14	0.01	
2:29:31	11:03:08	-0.05	0.07	-0.03	-0.01	-0.14	0.01	
2:30:01	11:03:38	-0.05	0.07	-0.04	0.00	-0.14	0.00	
2:30:31	11:04:08	-0.05	0.07	-0.04	-0.01	-0.14	0.01	
2:31:01	11:04:38	-0.05	0.07	-0.04	-0.01	-0.14	0.00	
2:31:31	11:05:08	-0.05	0.06	-0.04	-0.01	-0.14	0.00	
2:32:01	11:05:38	-0.05	0.07	-0.04	-0.01	-0.14	0.01	
2:32:31	11:06:08	-0.03	0.07	-0.04	0.00	-0.14	0.00	
2:33:01	11:06:38	-0.05	0.06	-0.04	0.00	-0.14	0.00	
2:33:31	11:07:08	-0.03	0.07	-0.04	-0.02	-0.14	0.01	
2:34:01	11:07:38	-0.05	0.07	-0.04	-0.01	-0.14	0.01	
2:34:31	11:08:08	-0.05	0.07	-0.04	0.00	-0.14	0.01	
2:35:01	11:08:38	-0.04	0.07	-0.04	0.00	-0.14	0.01	
2:35:31	11:09:08	-0.05	0.07	-0.03	-0.01	-0.14	0.01	
2:36:02	11:09:39	-0.05	0.07	-0.04	-0.01	-0.16	0.01	
2:36:31	11:10:08	-0.05	0.07	-0.04	0.00	-0.15	0.00	
2:37:01	11:10:38	-0.05	0.06	-0.04	0.00	-0.17	0.01	
2:37:31	11:11:08	-0.05	0.06	-0.04	-0.01	-0.17	0.01	
2:38:01	11:11:38	-0.05	0.07	-0.04	-0.01	-0.17	0.01	
2:38:31	11:12:08	-0.05	0.07	-0.04	0.00	-0.17	0.01	
2:39:01	11:12:38	-0.05	0.07	-0.03	-0.01	-0.17	0.01	
2:39:31	11:13:08	-0.04	0.07	-0.04	-0.02	-0.17	0.01	
2:40:01	11:13:38	-0.05	0.07	-0.04	0.01	-0.17	0.01	
2:40:31	11:14:08	-0.05	0.07	-0.06	0.00	-0.17	0.01	
2:41:01	11:14:38	-0.05	0.07	-0.06	0.00	-0.17	0.01	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:41:31	11:15:08	-0.05	0.07	-0.04	-0.01	-0.17	0.01	
2:42:01	11:15:38	-0.05	0.08	-0.04	0.00	-0.17	0.01	
2:42:31	11:16:08	-0.05	0.07	-0.04	-0.01	-0.17	0.02	
2:43:01	11:16:38	-0.05	0.06	-0.04	0.00	-0.17	0.01	
2:43:31	11:17:08	-0.05	0.07	-0.04	-0.01	-0.17	0.02	
2:44:01	11:17:38	-0.05	0.07	-0.05	0.00	-0.17	0.01	
2:44:32	11:18:10	-0.05	0.06	-0.04	-0.01	-0.17	0.01	
2:45:01	11:18:38	-0.05	0.07	-0.04	0.00	-0.17	0.01	
2:45:31	11:19:08	-0.05	0.07	-0.04	-0.01	-0.17	0.01	
2:46:01	11:19:38	-0.05	0.07	-0.04	-0.01	-0.17	0.01	End step 2 swith to claw blower
2:46:31	11:20:08	-0.05	0.07	-0.03	-0.01	-0.17	0.01	
2:47:01	11:20:38	-0.05	0.07	-0.03	0.00	-0.18	0.01	
2:47:31	11:21:08	-0.04	0.06	-0.03	-0.01	-0.18	0.01	
2:48:01	11:21:38	-0.05	0.07	-0.04	0.00	-0.18	0.01	
2:48:31	11:22:08	-0.03	0.06	-0.03	0.00	-0.18	0.02	
2:49:01	11:22:38	-0.03	0.07	-0.03	0.00	-0.18	0.02	
2:49:31	11:23:08	-0.05	0.07	-0.03	-0.01	-0.19	0.01	
2:50:01	11:23:38	-0.05	0.07	-0.05	-0.01	-0.19	0.01	
2:50:31	11:24:08	-0.05	0.07	-0.06	-0.01	-0.19	0.02	
2:51:01	11:24:38	-0.04	0.07	-0.04	-0.01	-0.19	0.01	
2:51:31	11:25:08	-0.05	0.07	-0.04	-0.01	-0.20	0.01	
2:52:01	11:25:38	-0.05	0.06	-0.04	-0.02	-0.21	0.01	
2:52:31	11:26:08	-0.05	0.07	-0.05	-0.01	-0.21	0.01	
2:53:01	11:26:38	-0.05	0.07	-0.05	-0.01	-0.21	0.02	
2:53:31	11:27:08	-0.05	0.06	-0.05	-0.02	-0.21	0.01	
2:54:01	11:27:38	-0.05	0.07	-0.06	-0.02	-0.21	0.02	
2:54:31	11:28:08	-0.05	0.07	-0.03	0.00	-0.22	0.02	
2:55:01	11:28:39	-0.05	0.06	-0.03	-0.02	-0.22	0.01	
2:55:31	11:29:09	-0.05	0.07	-0.04	-0.02	-0.22	0.01	
2:56:01	11:29:39	-0.05	0.06	-0.05	-0.01	-0.22	0.01	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
2:56:31	11:30:09	-0.05	0.07	-0.06	-0.02	-0.22	0.01	
2:57:01	11:30:39	-0.05	0.06	-0.08	-0.02	-0.22	0.00	
2:57:31	11:31:08	-0.05	0.04	-0.06	-0.01	-0.24	0.01	
2:58:01	11:31:39	-0.05	0.06	-0.07	-0.02	-0.24	0.00	
2:58:31	11:32:09	-0.05	0.06	-0.08	-0.02	-0.25	0.01	
2:59:01	11:32:39	-0.05	0.05	-0.10	-0.02	-0.25	0.02	
2:59:31	11:33:09	-0.05	0.06	-0.10	-0.03	-0.25	0.01	
3:00:01	11:33:39	-0.05	0.06	-0.10	-0.02	-0.27	0.02	
3:00:31	11:34:09	-0.05	0.07	-0.08	-0.02	-0.27	0.01	
3:01:01	11:34:38	-0.05	0.07	-0.08	-0.03	-0.28	0.01	
3:01:31	11:35:08	-0.05	0.06	-0.08	-0.02	-0.28	0.01	
3:02:01	11:35:38	-0.05	0.06	-0.08	-0.02	-0.29	0.01	
3:02:31	11:36:08	-0.07	0.07	-0.09	-0.03	-0.31	0.01	
3:03:01	11:36:38	-0.05	0.06	-0.10	-0.02	-0.32	0.01	
3:03:31	11:37:08	-0.07	0.07	-0.11	-0.02	-0.33	0.01	
3:04:01	11:37:38	-0.07	0.06	-0.12	-0.03	-0.34	0.01	
3:04:31	11:38:08	-0.07	0.07	-0.11	-0.02	-0.36	0.01	
3:05:01	11:38:38	-0.07	0.07	-0.12	-0.02	-0.36	0.01	
3:05:31	11:39:08	-0.08	0.07	-0.12	-0.02	-0.37	0.01	
3:06:01	11:39:38	-0.07	0.07	-0.11	-0.03	-0.38	0.01	
3:06:31	11:40:08	-0.07	0.07	-0.11	-0.02	-0.38	0.01	
3:07:01	11:40:38	-0.08	0.06	-0.11	-0.02	-0.39	0.01	
3:07:31	11:41:08	-0.08	0.06	-0.11	-0.01	-0.39	0.01	
3:08:01	11:41:38	-0.08	0.07	-0.12	-0.02	-0.39	0.01	
3:08:31	11:42:08	-0.08	0.06	-0.11	-0.04	-0.40	0.01	
3:09:01	11:42:38	-0.08	0.06	-0.10	-0.02	-0.41	0.01	
3:09:31	11:43:08	-0.08	0.06	-0.10	-0.02	-0.41	0.01	
3:10:01	11:43:38	-0.08	0.06	-0.10	-0.02	-0.41	0.01	
3:10:31	11:44:08	-0.07	0.06	-0.10	-0.03	-0.41	0.02	
3:11:01	11:44:38	-0.07	0.07	-0.11	-0.03	-0.41	0.01	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:11:31	11:45:08	-0.08	0.06	-0.10	-0.02	-0.41	0.01	
3:12:01	11:45:38	-0.08	0.06	-0.11	-0.04	-0.41	0.01	
3:12:31	11:46:08	-0.07	0.07	-0.10	-0.03	-0.42	0.02	
3:13:01	11:46:38	-0.08	0.06	-0.11	-0.03	-0.42	0.01	
3:13:31	11:47:08	-0.08	0.06	-0.11	-0.03	-0.42	0.01	
3:14:01	11:47:38	-0.08	0.06	-0.10	-0.02	-0.42	0.01	
3:14:31	11:48:08	-0.08	0.06	-0.11	-0.03	-0.42	0.01	
3:15:01	11:48:38	-0.08	0.06	-0.13	-0.03	-0.43	0.01	
3:15:31	11:49:08	-0.08	0.06	-0.14	-0.03	-0.43	0.01	
3:16:01	11:49:38	-0.08	0.05	-0.11	-0.03	-0.43	0.01	
3:16:31	11:50:08	-0.08	0.06	-0.11	-0.04	-0.43	0.01	
3:17:01	11:50:39	-0.08	0.05	-0.13	-0.03	-0.45	0.01	
3:17:31	11:51:09	-0.08	0.06	-0.14	-0.04	-0.46	0.01	
3:18:01	11:51:39	-0.08	0.05	-0.13	-0.03	-0.46	0.01	
3:18:31	11:52:09	-0.08	0.05	-0.13	-0.03	-0.46	0.01	
3:19:01	11:52:39	-0.08	0.05	-0.12	-0.04	-0.46	0.01	
3:19:31	11:53:09	-0.08	0.05	-0.12	-0.03	-0.46	0.01	
3:20:01	11:53:39	-0.08	0.06	-0.13	-0.03	-0.46	0.01	
3:20:31	11:54:09	-0.08	0.05	-0.12	-0.03	-0.47	0.01	
3:21:01	11:54:39	-0.08	0.06	-0.11	-0.03	-0.47	0.01	
3:21:31	11:55:09	-0.08	0.05	-0.11	-0.04	-0.47	0.01	
3:22:01	11:55:39	-0.08	0.05	-0.11	-0.04	-0.47	0.02	
3:22:31	11:56:09	-0.08	0.05	-0.12	-0.04	-0.47	0.03	
3:23:01	11:56:39	-0.08	0.06	-0.12	-0.03	-0.47	0.01	
3:23:31	11:57:09	-0.08	0.05	-0.13	-0.04	-0.48	0.02	
3:24:01	11:57:39	-0.08	0.05	-0.13	-0.03	-0.48	0.01	
3:24:31	11:58:09	-0.08	0.05	-0.12	-0.03	-0.48	0.01	
3:25:01	11:58:39	-0.08	0.05	-0.13	-0.03	-0.48	0.02	
3:25:31	11:59:09	-0.08	0.05	-0.13	-0.03	-0.49	0.01	
3:26:01	11:59:39	-0.08	0.05	-0.11	-0.04	-0.48	0.02	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:26:31	12:00:09	-0.10	0.05	-0.14	-0.03	-0.48	0.01	
3:27:01	12:00:39	-0.10	0.05	-0.15	-0.04	-0.49	0.01	
3:27:31	12:01:09	-0.08	0.04	-0.14	-0.04	-0.48	0.01	
3:28:01	12:01:39	-0.10	0.05	-0.14	-0.04	-0.49	0.02	
3:28:31	12:02:09	-0.10	0.05	-0.15	-0.04	-0.50	0.02	
3:29:01	12:02:39	-0.10	0.04	-0.14	-0.04	-0.50	0.02	
3:29:31	12:03:09	-0.10	0.05	-0.14	-0.03	-0.50	0.01	
3:30:02	12:03:39	-0.10	0.04	-0.13	-0.04	-0.50	0.02	
3:30:31	12:04:09	-0.10	0.05	-0.14	-0.04	-0.50	0.01	
3:31:01	12:04:39	-0.08	0.04	-0.14	-0.03	-0.50	0.01	
3:31:31	12:05:09	-0.08	0.05	-0.13	-0.03	-0.50	0.02	
3:32:01	12:05:39	-0.08	0.06	-0.12	-0.03	-0.50	0.02	
3:32:31	12:06:09	-0.08	0.05	-0.11	-0.03	-0.50	0.03	
3:33:01	12:06:39	-0.08	0.05	-0.12	-0.04	-0.51	0.01	
3:33:31	12:07:09	-0.10	0.05	-0.13	-0.02	-0.51	0.02	
3:34:01	12:07:39	-0.09	0.05	-0.14	-0.04	-0.51	0.02	
3:34:31	12:08:09	-0.10	0.04	-0.13	-0.04	-0.51	0.01	
3:35:01	12:08:39	-0.10	0.05	-0.14	-0.04	-0.51	0.01	
3:35:31	12:09:09	-0.10	0.05	-0.14	-0.04	-0.51	0.02	
3:36:01	12:09:39	-0.10	0.05	-0.14	-0.03	-0.51	0.01	
3:36:31	12:10:09	-0.10	0.05	-0.14	-0.05	-0.51	0.03	
3:37:01	12:10:39	-0.10	0.05	-0.14	-0.04	-0.51	0.02	
3:37:31	12:11:09	-0.10	0.05	-0.15	-0.04	-0.51	0.02	
3:38:01	12:11:39	-0.10	0.06	-0.14	-0.05	-0.51	0.02	
3:38:31	12:12:09	-0.10	0.05	-0.14	-0.03	-0.52	0.01	
3:39:01	12:12:39	-0.10	0.05	-0.15	-0.03	-0.52	0.02	
3:39:31	12:13:09	-0.10	0.05	-0.15	-0.04	-0.52	0.02	
3:40:01	12:13:39	-0.10	0.06	-0.15	-0.03	-0.52	0.01	
3:40:31	12:14:09	-0.10	0.05	-0.15	-0.04	-0.52	0.01	
3:41:01	12:14:39	-0.10	0.05	-0.15	-0.04	-0.53	0.02	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:41:31	12:15:09	-0.10	0.05	-0.15	-0.04	-0.53	0.01	
3:42:01	12:15:39	-0.10	0.06	-0.14	-0.04	-0.52	0.01	
3:42:31	12:16:09	-0.10	0.06	-0.14	-0.03	-0.53	0.01	
3:43:01	12:16:39	-0.10	0.06	-0.14	-0.04	-0.52	0.02	
3:43:31	12:17:09	-0.10	0.06	-0.14	-0.03	-0.53	0.01	
3:44:01	12:17:39	-0.10	0.06	-0.14	-0.04	-0.53	-0.02	
3:44:31	12:18:09	-0.10	0.06	-0.15	-0.03	-0.54	-0.05	
3:45:01	12:18:39	-0.10	0.06	-0.14	-0.04	-0.54	-0.05	
3:45:31	12:19:09	-0.10	0.05	-0.14	-0.04	-0.54	-0.05	
3:46:01	12:19:39	-0.10	0.05	-0.14	-0.03	-0.54	-0.05	
3:46:31	12:20:09	-0.10	0.06	-0.14	-0.03	-0.54	-0.05	
3:47:01	12:20:39	-0.10	0.05	-0.14	-0.04	-0.54	-0.05	
3:47:31	12:21:09	-0.10	0.05	-0.14	-0.04	-0.54	-0.05	
3:48:01	12:21:39	-0.10	0.05	-0.15	-0.04	-0.54	-0.05	
3:48:31	12:22:09	-0.10	0.06	-0.14	-0.05	-0.54	-0.05	
3:49:01	12:22:39	-0.10	0.05	-0.14	-0.05	-0.54	-0.05	
3:49:31	12:23:09	-0.10	0.05	-0.14	-0.04	-0.54	-0.05	
3:50:01	12:23:39	-0.10	0.05	-0.14	-0.05	-0.54	-0.05	
3:50:31	12:24:09	-0.10	0.05	-0.14	-0.05	-0.54	-0.05	
3:51:01	12:24:39	-0.10	0.05	-0.15	-0.04	-0.54	-0.05	
3:51:31	12:25:09	-0.11	0.05	-0.15	-0.04	-0.54	-0.05	
3:52:01	12:25:39	-0.10	0.05	-0.15	-0.04	-0.54	-0.05	
3:52:31	12:26:09	-0.10	0.05	-0.14	-0.05	-0.54	-0.05	
3:53:01	12:26:39	-0.10	0.05	-0.14	-0.06	-0.54	-0.05	
3:53:31	12:27:09	-0.10	0.05	-0.14	-0.04	-0.54	-0.05	
3:54:01	12:27:39	-0.10	0.04	-0.14	-0.05	-0.54	-0.05	
3:54:31	12:28:09	-0.10	0.04	-0.14	-0.05	-0.54	-0.05	
3:55:01	12:28:39	-0.10	0.04	-0.14	-0.04	-0.54	-0.05	
3:55:31	12:29:09	-0.10	0.03	-0.15	-0.05	-0.54	-0.05	
3:56:01	12:29:39	-0.12	0.04	-0.15	-0.04	-0.54	-0.05	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
3:56:31	12:30:09	-0.12	0.04	-0.14	-0.05	-0.54	-0.05	
3:57:01	12:30:39	-0.12	0.03	-0.14	-0.05	-0.54	-0.05	
3:57:31	12:31:09	-0.12	0.04	-0.15	-0.04	-0.54	-0.05	
3:58:01	12:31:39	-0.12	0.04	-0.15	-0.05	-0.54	-0.05	
3:58:31	12:32:09	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
3:59:01	12:32:39	-0.12	0.04	-0.15	-0.05	-0.54	-0.05	
3:59:31	12:33:09	-0.12	0.02	-0.16	-0.05	-0.54	-0.05	
4:00:01	12:33:39	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:00:31	12:34:09	-0.12	0.04	-0.15	-0.05	-0.54	-0.05	
4:01:01	12:34:39	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:01:31	12:35:09	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:02:01	12:35:39	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:02:31	12:36:09	-0.12	0.03	-0.16	-0.05	-0.54	-0.05	
4:03:01	12:36:39	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:03:31	12:37:09	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:04:01	12:37:39	-0.12	0.02	-0.16	-0.04	-0.54	-0.05	
4:04:31	12:38:09	-0.12	0.02	-0.17	-0.05	-0.54	-0.05	
4:05:01	12:38:39	-0.12	0.03	-0.16	-0.06	-0.54	-0.05	
4:05:31	12:39:09	-0.12	0.02	-0.17	-0.04	-0.54	-0.05	
4:06:01	12:39:39	-0.12	0.02	-0.17	-0.04	-0.54	-0.05	
4:06:31	12:40:09	-0.13	0.02	-0.17	-0.05	-0.54	-0.05	
4:07:01	12:40:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:07:31	12:41:09	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:08:01	12:41:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:08:31	12:42:09	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:09:01	12:42:39	-0.13	0.02	-0.16	-0.04	-0.54	-0.05	
4:09:31	12:43:09	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:10:01	12:43:39	-0.12	0.04	-0.15	-0.04	-0.54	-0.05	
4:10:31	12:44:09	-0.12	0.04	-0.15	-0.04	-0.54	-0.05	
4:11:01	12:44:39	-0.12	0.03	-0.15	-0.04	-0.54	-0.05	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:11:31	12:45:09	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:12:01	12:45:39	-0.12	0.03	-0.15	-0.05	-0.54	-0.05	
4:12:31	12:46:09	-0.12	0.03	-0.16	-0.05	-0.54	-0.05	
4:13:01	12:46:39	-0.12	0.04	-0.15	-0.04	-0.54	-0.05	
4:13:31	12:47:09	-0.12	0.04	-0.16	-0.05	-0.54	-0.05	
4:14:01	12:47:39	-0.12	0.05	-0.15	-0.04	-0.54	-0.05	
4:14:31	12:48:09	-0.12	0.04	-0.16	-0.05	-0.54	-0.05	
4:15:01	12:48:39	-0.12	0.05	-0.15	-0.05	-0.54	-0.05	
4:15:31	12:49:09	-0.13	0.04	-0.17	-0.05	-0.54	-0.05	
4:16:01	12:49:39	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:16:31	12:50:09	-0.13	0.04	-0.17	-0.05	-0.54	-0.05	
4:17:01	12:50:39	-0.13	0.04	-0.15	-0.04	-0.54	-0.05	
4:17:31	12:51:09	-0.13	0.05	-0.15	-0.05	-0.54	-0.05	
4:18:01	12:51:39	-0.13	0.04	-0.16	-0.04	-0.54	-0.05	
4:18:31	12:52:09	-0.13	0.04	-0.17	-0.05	-0.54	-0.05	
4:19:01	12:52:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:19:31	12:53:09	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:20:01	12:53:39	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:20:31	12:54:09	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:21:02	12:54:39	-0.13	0.03	-0.17	-0.04	-0.54	-0.05	
4:21:31	12:55:09	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:22:01	12:55:39	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:22:31	12:56:09	-0.13	0.04	-0.17	-0.05	-0.54	-0.05	
4:23:01	12:56:39	-0.13	0.04	-0.16	-0.04	-0.54	-0.05	
4:23:31	12:57:09	-0.13	0.04	-0.16	-0.04	-0.54	-0.05	
4:24:01	12:57:39	-0.13	0.03	-0.16	-0.04	-0.54	-0.05	
4:24:31	12:58:09	-0.13	0.03	-0.17	-0.01	-0.54	-0.05	
4:25:01	12:58:39	-0.13	0.04	-0.16	-0.05	-0.54	-0.05	
4:25:31	12:59:09	-0.13	0.03	-0.17	-0.04	-0.54	-0.05	
4:26:01	12:59:39	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:26:31	13:00:09	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:27:01	13:00:39	-0.13	0.04	-0.17	-0.03	-0.54	-0.05	
4:27:31	13:01:09	-0.13	0.03	-0.16	-0.05	-0.54	-0.05	
4:28:01	13:01:39	-0.13	0.04	-0.15	-0.05	-0.54	-0.05	
4:28:31	13:02:09	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:29:01	13:02:39	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:29:31	13:03:09	-0.13	0.04	-0.17	-0.04	-0.54	-0.05	
4:30:01	13:03:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:30:31	13:04:09	-0.13	0.04	-0.17	-0.05	-0.54	-0.05	
4:31:01	13:04:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:31:31	13:05:09	-0.14	0.04	-0.17	-0.05	-0.54	-0.05	
4:32:01	13:05:39	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:32:31	13:06:09	-0.13	0.03	-0.18	-0.06	-0.54	-0.05	
4:33:01	13:06:39	-0.13	0.03	-0.17	-0.03	-0.54	-0.05	
4:33:31	13:07:09	-0.13	0.03	-0.17	-0.06	-0.54	-0.05	
4:34:01	13:07:39	-0.14	0.03	-0.17	-0.05	-0.54	-0.05	
4:34:31	13:08:09	-0.15	0.03	-0.20	-0.05	-0.54	-0.05	
4:35:01	13:08:39	-0.14	0.03	-0.18	-0.05	-0.54	-0.05	
4:35:31	13:09:09	-0.15	0.03	-0.18	-0.05	-0.54	-0.05	
4:36:01	13:09:39	-0.15	0.03	-0.18	-0.05	-0.54	-0.05	
4:36:31	13:10:09	-0.13	0.03	-0.18	-0.06	-0.54	-0.05	
4:37:01	13:10:39	-0.14	0.04	-0.18	-0.04	-0.54	-0.05	
4:37:31	13:11:09	-0.13	0.03	-0.17	-0.05	-0.54	-0.05	
4:38:01	13:11:39	-0.13	0.03	-0.17	-0.04	-0.54	-0.05	
4:38:31	13:12:09	-0.13	0.03	-0.17	-0.04	-0.54	-0.05	
4:39:01	13:12:39	-0.14	0.03	-0.18	-0.06	-0.54	-0.05	
4:39:31	13:13:09	-0.13	0.03	-0.17	-0.06	-0.54	-0.05	
4:40:01	13:13:39	-0.13	0.03	-0.17	-0.06	-0.54	-0.05	
4:40:31	13:14:09	-0.13	0.03	-0.18	-0.04	-0.54	-0.05	
4:41:01	13:14:39	-0.15	0.03	-0.18	-0.05	-0.54	-0.05	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:41:31	13:15:09	-0.15	0.03	-0.18	-0.05	-0.54	-0.05	
4:42:01	13:15:39	-0.15	0.02	-0.18	-0.05	-0.54	-0.05	
4:42:31	13:16:09	-0.15	0.03	-0.18	-0.05	-0.54	-0.05	
4:43:01	13:16:39	-0.15	0.00	-0.18	-0.05	-0.54	-0.05	
4:43:31	13:17:09	-0.13	0.03	-0.18	-0.06	-0.54	-0.05	
4:44:01	13:17:39	-0.15	0.03	-0.17	-0.05	-0.54	-0.05	
4:44:31	13:18:09	-0.15	0.03	-0.17	-0.04	-0.54	-0.05	
4:45:05	13:18:42	-0.15	0.03	-0.18	-0.06	-0.54	-0.05	
4:45:31	13:19:09	-0.16	0.03	-0.19	-0.05	-0.54	-0.05	
4:46:01	13:19:39	-0.16	0.02	-0.20	-0.04	-0.56	-0.09	
4:46:31	13:20:09	-0.16	0.03	-0.20	-0.05	-0.56	-0.04	
4:47:01	13:20:39	-0.16	0.03	-0.19	-0.05	-0.56	-0.04	
4:47:31	13:21:09	-0.15	0.03	-0.17	-0.04	-0.56	-0.04	
4:48:01	13:21:39	-0.15	0.03	-0.17	-0.05	-0.56	-0.04	
4:48:31	13:22:09	-0.15	0.03	-0.17	-0.05	-0.56	-0.05	
4:49:01	13:22:39	-0.15	0.04	-0.17	-0.05	-0.56	-0.05	
4:49:31	13:23:09	-0.15	0.03	-0.17	-0.04	-0.56	-0.05	
4:50:01	13:23:39	-0.15	0.02	-0.17	-0.04	-0.56	-0.05	
4:50:31	13:24:09	-0.15	0.03	-0.17	-0.04	-0.56	-0.05	
4:51:01	13:24:39	-0.15	0.04	-0.17	-0.05	-0.56	-0.05	
4:51:32	13:25:09	-0.15	0.03	-0.17	-0.04	-0.56	-0.05	
4:52:01	13:25:39	-0.16	0.04	-0.18	-0.04	-0.56	-0.04	
4:52:31	13:26:09	-0.17	0.04	-0.20	-0.04	-0.56	-0.05	
4:53:01	13:26:39	-0.15	0.04	-0.20	-0.04	-0.56	-0.05	
4:53:31	13:27:09	-0.15	0.04	-0.18	-0.04	-0.56	-0.05	
4:54:01	13:27:39	-0.15	0.04	-0.17	-0.04	-0.56	-0.05	
4:54:31	13:28:09	-0.15	0.04	-0.17	-0.05	-0.56	-0.05	
4:55:01	13:28:39	-0.15	0.03	-0.18	-0.04	-0.56	-0.04	
4:55:31	13:29:09	-0.15	0.03	-0.17	-0.06	-0.56	-0.05	
4:56:01	13:29:39	-0.15	0.03	-0.18	-0.05	-0.56	-0.04	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
4:56:31	13:30:09	-0.15	0.03	-0.19	-0.05	-0.56	-0.04	
4:57:01	13:30:39	-0.15	0.04	-0.20	-0.04	-0.56	-0.04	
4:57:31	13:31:09	-0.15	0.03	-0.18	-0.05	-0.56	-0.05	
4:58:01	13:31:39	-0.16	0.04	-0.20	-0.04	-0.56	-0.04	
4:58:31	13:32:09	-0.16	0.04	-0.19	-0.05	-0.56	-0.05	
4:59:02	13:32:39	-0.15	0.04	-0.18	-0.04	-0.56	-0.04	
4:59:31	13:33:09	-0.15	0.05	-0.17	-0.05	-0.57	-0.05	
5:00:01	13:33:39	-0.15	0.04	-0.17	-0.04	-0.57	-0.05	
5:00:31	13:34:09	-0.15	0.04	-0.17	-0.05	-0.57	-0.04	
5:01:01	13:34:39	-0.15	0.04	-0.17	-0.04	-0.57	-0.04	
5:01:32	13:35:09	-0.15	0.04	-0.17	-0.04	-0.57	-0.04	
5:02:02	13:35:39	-0.15	0.05	-0.18	-0.03	-0.57	-0.03	
5:02:31	13:36:09	-0.15	0.04	-0.17	-0.04	-0.57	-0.04	
5:03:02	13:36:39	-0.15	0.04	-0.17	-0.04	-0.57	-0.04	
5:03:32	13:37:09	-0.15	0.05	-0.17	-0.05	-0.57	-0.04	
5:04:01	13:37:39	-0.15	0.04	-0.17	-0.03	-0.57	-0.04	
5:04:32	13:38:10	-0.15	0.04	-0.17	-0.04	-0.57	-0.04	
5:05:01	13:38:39	-0.15	0.05	-0.17	-0.04	-0.57	-0.04	
5:05:32	13:39:09	-0.16	0.04	-0.17	-0.05	-0.57	-0.04	
5:06:02	13:39:39	-0.16	0.05	-0.18	-0.04	-0.57	-0.03	
5:06:32	13:40:09	-0.17	0.04	-0.19	-0.04	-0.57	-0.04	
5:07:02	13:40:39	-0.15	0.05	-0.18	-0.04	-0.57	-0.04	
5:07:31	13:41:09	-0.16	0.04	-0.18	-0.05	-0.57	-0.03	
5:08:01	13:41:39	-0.16	0.05	-0.18	-0.04	-0.57	-0.03	
5:08:32	13:42:09	-0.16	0.04	-0.19	-0.04	-0.57	-0.03	
5:09:01	13:42:39	-0.17	0.02	-0.18	-0.04	-0.57	-0.04	
5:09:32	13:43:09	-0.15	0.04	-0.17	-0.03	-0.57	-0.04	
5:10:01	13:43:39	-0.16	0.04	-0.18	-0.06	-0.57	-0.03	
5:10:32	13:44:09	-0.17	0.05	-0.18	-0.04	-0.57	-0.03	
5:11:01	13:44:39	-0.17	0.04	-0.19	-0.05	-0.57	-0.03	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
5:11:31	13:45:09	-0.17	0.04	-0.20	-0.04	-0.57	-0.03	
5:12:02	13:45:39	-0.17	0.04	-0.19	-0.03	-0.57	-0.04	
5:12:31	13:46:09	-0.17	0.05	-0.18	-0.03	-0.57	-0.03	
5:13:01	13:46:39	-0.17	0.04	-0.18	-0.04	-0.57	-0.03	
5:13:31	13:47:09	-0.16	0.04	-0.18	-0.05	-0.57	-0.04	
5:14:02	13:47:39	-0.16	0.05	-0.17	-0.04	-0.57	-0.03	
5:14:31	13:48:09	-0.16	0.04	-0.17	-0.05	-0.57	-0.03	
5:15:02	13:48:39	-0.16	0.05	-0.18	-0.04	-0.57	-0.04	
5:15:31	13:49:09	-0.16	0.05	-0.18	-0.04	-0.57	-0.04	
5:16:01	13:49:39	-0.16	0.05	-0.18	-0.04	-0.58	-0.04	
5:16:32	13:50:09	-0.16	0.04	-0.18	-0.04	-0.57	-0.04	
5:17:02	13:50:39	-0.16	0.05	-0.17	-0.05	-0.57	-0.04	
5:17:32	13:51:09	-0.16	0.05	-0.17	-0.04	-0.57	-0.03	
5:18:02	13:51:39	-0.16	0.05	-0.18	-0.04	-0.58	-0.04	
5:18:32	13:52:09	-0.15	0.05	-0.17	-0.04	-0.58	-0.04	
5:19:02	13:52:39	-0.16	0.05	-0.17	-0.03	-0.58	-0.03	
5:19:32	13:53:09	-0.15	0.05	-0.17	-0.03	-0.58	-0.04	
5:20:02	13:53:39	-0.17	0.05	-0.18	-0.04	-0.58	-0.04	
5:20:32	13:54:09	-0.17	0.05	-0.18	-0.04	-0.58	-0.04	
5:21:02	13:54:39	-0.17	0.04	-0.20	-0.04	-0.58	-0.03	
5:21:32	13:55:09	-0.17	0.05	-0.19	-0.04	-0.58	-0.04	
5:22:02	13:55:39	-0.17	0.05	-0.20	-0.05	-0.58	-0.04	
5:22:32	13:56:09	-0.17	0.04	-0.19	-0.05	-0.58	-0.04	
5:23:02	13:56:39	-0.16	0.04	-0.17	-0.04	-0.58	-0.04	
5:23:32	13:57:09	-0.15	0.04	-0.18	-0.05	-0.59	-0.05	
5:24:02	13:57:39	-0.15	0.03	-0.17	-0.04	-0.58	-0.05	
5:24:32	13:58:09	-0.17	0.05	-0.17	-0.04	-0.58	-0.04	
5:25:02	13:58:39	-0.17	0.05	-0.17	-0.05	-0.58	-0.04	
5:25:32	13:59:09	-0.17	0.04	-0.18	-0.04	-0.58	-0.04	
5:26:02	13:59:39	-0.16	0.05	-0.18	-0.03	-0.58	-0.04	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c	L.L. Change - = ↓ + = ↑	VAC in w.c	L.L. Change - = ↓ + = ↑	VAC in w.c	
5:26:32	14:00:09	-0.17	0.05	-0.18	-0.04	-0.58	-0.04	
5:27:02	14:00:39	-0.17	0.05	-0.17	-0.04	-0.58	-0.04	
5:27:32	14:01:09	-0.17	0.05	-0.17	-0.04	-0.58	-0.04	
5:28:02	14:01:39	-0.18	0.05	-0.18	-0.03	-0.58	-0.04	
5:28:32	14:02:09	-0.18	0.05	-0.20	-0.04	-0.58	-0.04	
5:29:02	14:02:39	-0.17	0.05	-0.20	-0.03	-0.58	-0.04	
5:29:32	14:03:09	-0.17	0.05	-0.20	-0.04	-0.58	-0.05	
5:30:02	14:03:39	-0.17	0.05	-0.17	-0.03	-0.58	-0.04	

VEG Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

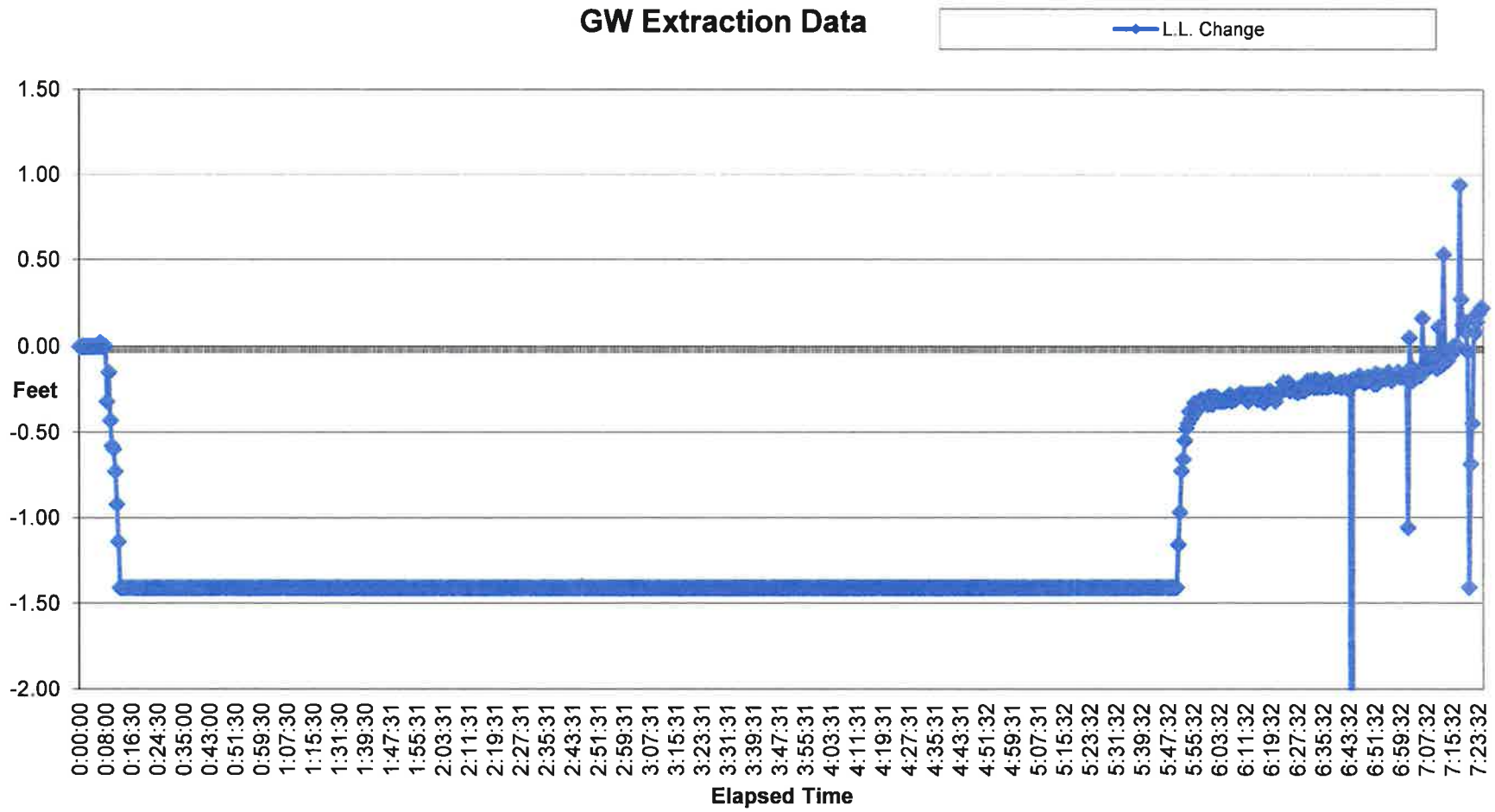
4:49:33	13:23:10	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
ELAPSED TIME hh/mm/ss	Time	RADIO 5		RADIO 6		RADIO 7		Comments
		MW-7		MW-2		MW-4		
		L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	L.L. Change - = ↓ + = ↑	VAC in w.c.	
5:30:32	14:04:09	-0.16	0.04	-0.17	-0.04	-0.58	-0.05	
5:31:02	14:04:39	-0.16	0.05	-0.17	-0.03	-0.58	-0.04	
5:31:32	14:05:09	-0.16	0.05	-0.17	-0.04	-0.59	-0.04	
5:32:02	14:05:39	-0.17	0.04	-0.17	-0.03	-0.59	-0.04	
5:32:32	14:06:09	-0.17	0.05	-0.17	-0.03	-0.59	-0.04	
5:33:02	14:06:39	-0.17	0.05	-0.18	-0.04	-0.60	-0.04	
5:33:32	14:07:09	-0.17	0.05	-0.18	-0.04	-0.60	-0.03	
5:34:02	14:07:39	-0.17	0.05	-0.19	-0.03	-0.60	-0.04	
5:34:32	14:08:09	-0.17	0.05	-0.18	-0.03	-0.60	-0.04	
5:35:02	14:08:39	-0.17	0.05	-0.18	-0.04	-0.60	-0.04	
5:35:32	14:09:09	-0.17	0.05	-0.18	-0.03	-0.60	-0.04	
5:36:02	14:09:39	-0.19	0.05	-0.20	-0.03	-0.60	-0.04	
5:36:32	14:10:09	-0.19	0.05	-0.20	-0.04	-0.60	-0.03	
5:37:02	14:10:39	-0.19	0.04	-0.21	-0.03	-0.60	-0.05	
5:37:32	14:11:09	-0.19	0.06	-0.21	-0.04	-0.60	-0.04	
5:38:02	14:11:39	-0.19	0.05	-0.20	-0.03	-0.61	-0.03	
5:38:32	14:12:09	-0.18	0.06	-0.20	-0.03	-0.61	-0.04	
5:39:02	14:12:39	-0.17	0.05	-0.18	-0.03	-0.61	-0.04	
5:39:32	14:13:09			-0.18	-0.04	-0.61	-0.04	
5:40:02	14:13:39			-0.18	-0.04	-0.61	-0.04	
5:40:32	14:14:09			-0.18	-0.03	-0.61	-0.04	
5:41:02	14:14:39					-0.61	-0.04	
5:41:32	14:15:09					-0.61	-0.03	
5:42:02	14:15:39					-0.61	-0.04	
5:42:32	14:16:09					-0.61	-0.04	
5:43:02	14:16:39					-0.61	-0.04	
5:43:32	14:17:09					-0.61	-0.04	
5:44:02	14:17:39					-0.61	-0.04	
5:44:32	14:18:09							
								end all sampling and test

VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

RW-1

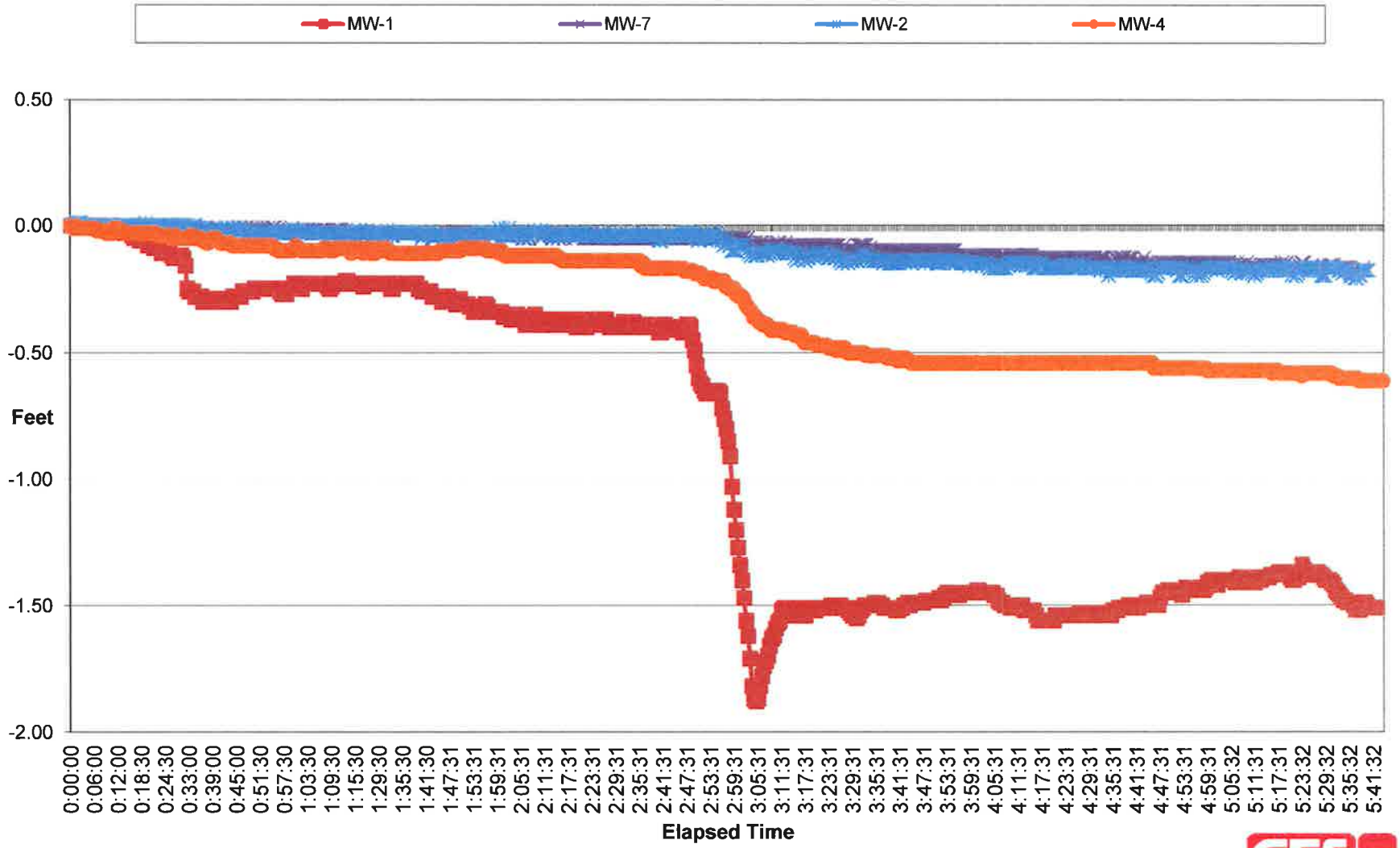


VEGE Study Data

Cook's Country Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

Satellite Well L.L. Change

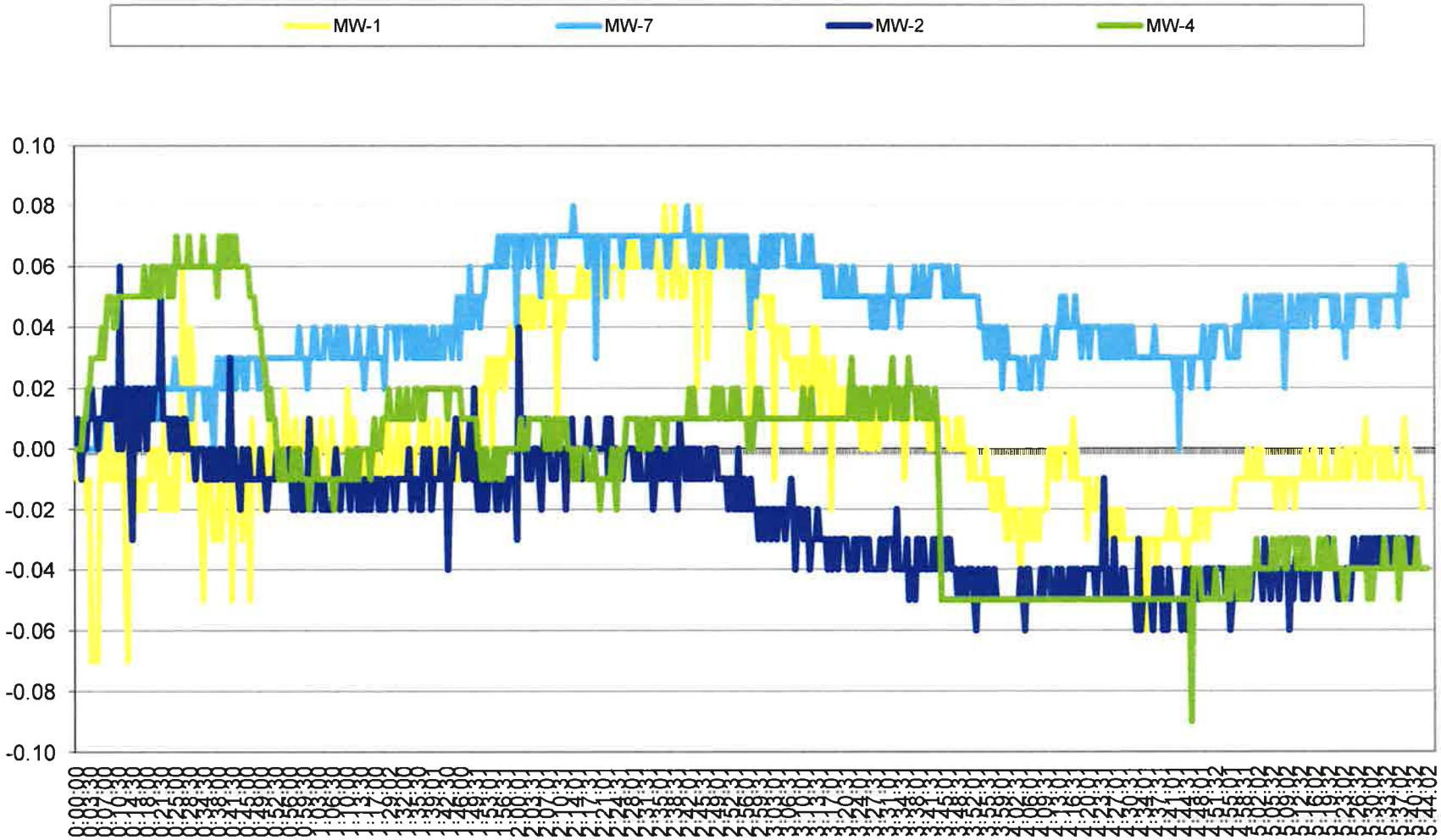


VEGE Study Data

Cook's Contry Store
21042 Cooks Road
Robertsdale, PA

June 29, 2016

Satellite Well Vacuum Response



APPENDIX L

FEASIBILITY TEST SOIL GAS SAMPLING ANALYTICAL DATA SHEETS

con-test®
ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

July 19, 2016

Michael Crowe
Mountain Research, LLC
825 25th Street
Altoona, PA 16601

Project Location: Robertsdale, PA
Client Job Number:
Project Number: 4547.15.01
Laboratory Work Order Number: 16G0134

Enclosed are results of analyses for samples received by the laboratory on July 5, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven M. Case
Project Manager

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con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Mountain Research, LLC
825 25th Street
Altoona, PA 16601
ATTN: Michael Crowe

REPORT DATE: 7/19/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4547.15.01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 16G0134

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Robertsdale, PA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Low Vac	16G0134-01	Soil Gas		EPA TO-15	
Mid Vac	16G0134-02	Soil Gas		EPA TO-15	
High Vac	16G0134-03	Soil Gas		EPA TO-15	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

EPA TO-15

Qualifications:

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

Methyl tert-Butyl Ether (MTBE)
B153901-BS1

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Naphthalene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac], B153901-BLK1, B153901-BS1

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

1,2,4-Trimethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,3,5-Trimethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,4-Difluorobenzene (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

1,4-Difluorobenzene (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

4-Bromofluorobenzene (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

4-Bromofluorobenzene (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Benzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Bromochloromethane (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Chlorobenzene-d5 (1)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Chlorobenzene-d5 (2)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Ethylbenzene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Isopropylbenzene (Cumene)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

m&p-Xylene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Methyl tert-Butyl Ether (MTBE)
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Naphthalene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

o-Xylene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

Toluene
16G0134-01[Low Vac], 16G0134-02[Mid Vac], 16G0134-03[High Vac]

V-06

Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

Analyte & Samples(s) Qualified:

Methyl tert-Butyl Ether (MTBE)
B153901-BS1

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ANALYTICAL LABORATORY

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The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa Worthington

Lisa A. Worthington
Project Manager

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: Low Vac
Sample ID: 16G0134-01
Sample Matrix: Soil Gas
Sampled: 6/29/2016 15:44

Sample Description/Location:
Sub Description/Location:
Canister ID: 1451
Canister Size: 6 liter
Flow Controller ID: 4000
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.6
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	7200	150	RL-11	23000	480	3000	7/13/16 6:18	CMR
Ethylbenzene	1200	150	RL-11	5300	650	3000	7/13/16 6:18	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 6:18	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 6:18	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 6:18	CMR
Toluene	12000	150	RL-11	44000	570	3000	7/13/16 6:18	CMR
1,2,4-Trimethylbenzene	150	150	RL-11	750	740	3000	7/13/16 6:18	CMR
1,3,5-Trimethylbenzene	ND	150	RL-11	ND	740	3000	7/13/16 6:18	CMR
m&p-Xylene	5800	300	RL-11	25000	1300	3000	7/13/16 6:18	CMR
o-Xylene	990	150	RL-11	4300	650	3000	7/13/16 6:18	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	99.2	RL-11	70-130	7/13/16 6:18
4-Bromofluorobenzene (2)	116	RL-11	70-130	7/13/16 6:18

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: Mid Vac
Sample ID: 16G0134-02
Sample Matrix: Soil Gas
Sampled: 6/29/2016 15:50

Sample Description/Location:
Sub Description/Location:
Canister ID: 1020
Canister Size: 6 liter
Flow Controller ID: 5033
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -3.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	11000	150	RL-11	35000	480	3000	7/13/16 6:57	CMR
Ethylbenzene	3200	150	RL-11	14000	650	3000	7/13/16 6:57	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 6:57	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 6:57	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 6:57	CMR
Toluene	20000	150	RL-11	74000	570	3000	7/13/16 6:57	CMR
1,2,4-Trimethylbenzene	910	150	RL-11	4500	740	3000	7/13/16 6:57	CMR
1,3,5-Trimethylbenzene	600	150	RL-11	2900	740	3000	7/13/16 6:57	CMR
m&p-Xylene	15000	300	RL-11	64000	1300	3000	7/13/16 6:57	CMR
o-Xylene	2900	150	RL-11	13000	650	3000	7/13/16 6:57	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	97.5	RL-11	70-130	7/13/16 6:57
4-Bromofluorobenzene (2)	113	RL-11	70-130	7/13/16 6:57

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Robertsdale, PA
Date Received: 7/5/2016
Field Sample #: High Vac
Sample ID: 16G0134-03
Sample Matrix: Soil Gas
Sampled: 6/29/2016 16:00

Sample Description/Location:
Sub Description/Location:
Canister ID: 1756
Canister Size: 6 liter
Flow Controller ID: 5034
Sample Type: Grab

Work Order: 16G0134
Initial Vacuum(in Hg): -27
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -6.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	Flag/Qual	ug/m3 Results	ug/m3 RL	Dilution	Date/Time Analyzed	Analyst
Benzene	15000	150	RL-11	48000	480	3000	7/13/16 7:37	CMR
Ethylbenzene	5000	150	RL-11	22000	650	3000	7/13/16 7:37	CMR
Isopropylbenzene (Cumene)	ND	380	RL-11	ND	1900	3000	7/13/16 7:37	CMR
Methyl tert-Butyl Ether (MTBE)	ND	150	RL-11	ND	540	3000	7/13/16 7:37	CMR
Naphthalene	ND	150	L-03, RL-11	ND	790	3000	7/13/16 7:37	CMR
Toluene	27000	150	RL-11	100000	570	3000	7/13/16 7:37	CMR
1,2,4-Trimethylbenzene	1600	150	RL-11	7800	740	3000	7/13/16 7:37	CMR
1,3,5-Trimethylbenzene	1000	150	RL-11	4900	740	3000	7/13/16 7:37	CMR
m&p-Xylene	23000	300	RL-11	100000	1300	3000	7/13/16 7:37	CMR
o-Xylene	4500	150	RL-11	20000	650	3000	7/13/16 7:37	CMR

Surrogates	% Recovery		% REC Limits	
4-Bromofluorobenzene (1)	97.8	RL-11	70-130	7/13/16 7:37
4-Bromofluorobenzene (2)	114	RL-11	70-130	7/13/16 7:37

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
16G0134-01 [Low Vac]	B153901	1.5	200	5	1000	400	40	07/12/16
16G0134-02 [Mid Vac]	B153901	1.5	200	5	1000	400	40	07/12/16
16G0134-03 [High Vac]	B153901	1.5	200	5	1000	400	40	07/12/16

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC		%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B153901 - TO-15 Prep												
Blank (B153901-BLK1)					Prepared & Analyzed: 07/12/16							
Benzene	ND	0.035										
Ethylbenzene	ND	0.035										
Isopropylbenzene (Cumene)	ND	0.089										
Methyl tert-Butyl Ether (MTBE)	ND	0.035										
Naphthalene	ND	0.035										L-03
Toluene	ND	0.035										
1,2,4-Trimethylbenzene	ND	0.035										
1,3,5-Trimethylbenzene	ND	0.035										
m&p-Xylene	ND	0.070										
o-Xylene	ND	0.035										
Surrogate: 4-Bromofluorobenzene (1)	*7.31*				*8.00*		*91.4*		*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			
LCS (B153901-BS1)					Prepared & Analyzed: 07/12/16							
Benzene	5.30				5.00		106		70-130			
Ethylbenzene	5.39				5.00		108		70-130			
Isopropylbenzene (Cumene)	ND	0.13		0.62					70-130			
Methyl tert-Butyl Ether (MTBE)	6.53				5.00		**131**	*	70-130			L-02, V-06
Naphthalene	3.19				5.00		**63.8**	*	70-130			L-03
Toluene	5.16				5.00		103		70-130			
1,2,4-Trimethylbenzene	5.26				5.00		105		70-130			
1,3,5-Trimethylbenzene	5.09				5.00		102		70-130			
m&p-Xylene	11.7				10.0		117		70-130			
o-Xylene	5.46				5.00		109		70-130			
Surrogate: 4-Bromofluorobenzene (1)	*7.64*				*8.00*		*95.6*		*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			
LCS (B153901-BS2)					Prepared & Analyzed: 07/12/16							
Benzene	ND	0.050		0.16					70-130			
Ethylbenzene	ND	0.050		0.22					70-130			
Isopropylbenzene (Cumene)	1.06				1.27		83.6		70-130			
Methyl tert-Butyl Ether (MTBE)	ND	0.050		0.18					70-130			
Naphthalene	0.00				1.19			*	70-130			
Toluene	ND	0.050		0.19					70-130			
1,2,4-Trimethylbenzene	ND	0.050		0.25					70-130			
1,3,5-Trimethylbenzene	ND	0.050		0.25					70-130			
m&p-Xylene	ND	0.10		0.43					70-130			
o-Xylene	ND	0.050		0.22					70-130			
Surrogate: 4-Bromofluorobenzene (1)	*0.00*				*8.00*			*	*70-130*			
Surrogate: 4-Bromofluorobenzene (4)	*0.00*				*8.00*			*	*70-130*			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-06	Continuing calibration did not meet method specifications and was biased on the high side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the high side.

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Benzene	AIHA,FL,NJ,NY,VA,ME
Ethylbenzene	AIHA,FL,NJ,NY,VA,ME
Isopropylbenzene (Cumene)	AIHA,NJ,NY,ME
Methyl tert-Butyl Ether (MTBE)	AIHA,FL,NJ,NY,VA,ME
Naphthalene	NY,ME
Toluene	AIHA,FL,NJ,NY,VA,ME
1,2,4-Trimethylbenzene	AIHA,NJ,NY,ME
1,3,5-Trimethylbenzene	AIHA,NJ,NY,ME
m&p-Xylene	AIHA,FL,NJ,NY,VA,ME
o-Xylene	AIHA,FL,NJ,NY,VA,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2016
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016

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16G0134

http://www.contestlabs.com

Doc #378 Rev 0 5/8/15

CHAIN OF CUSTODY RECORD (AIR)

39 Spruce Street
East Longmeadow, MA 01028

Company Name: Mountain Research, LLC.
Address: 825 25th Street, Altoona, PA 16601
Phone: 814-949-2034
Project Name: Cooks Country Store Feas. Test
Project Location: Robertsdale, PA
Project Number: 4547.15.01 P.O. 22086
Project Manager: Mike Crane
Con-Test Bid:
Invoice Recipient:
Sampled By:

Requested Turnaround Time
7-Day ☐ 10-Day ☑
Other:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☐
Other:
Enhanced Data Package Required: ☐
Email To: mcrane@mountainresearch.com
~~Fax To #:~~ Jharey@mountainresearch.com

ANALYSIS REQUESTED

Please fill out completely, sign, date and retain the yellow copy for your records

Summa canisters and flow controllers must be returned within 15 days of receipt or rental fees will apply

For summa canister and flow controller information please refer to Con-Test's Air Media Agreement

Lab Use: Con-Test Work Order#	Client Use: Client Sample ID / Description	Collection Data: Beginning Date/Time	Collection Data: Ending Date/Time	Duration: Total Minutes Sampled	Flow Rate (m³/min, L/min)	Matrix: Code	Volume (Liters, m³)	BTEX, Cumene	Naphthalene, MTBE	1,2,4-TMB, 1,3,5-TMB		Initial Pressure (" Hg)	Final Pressure (" Hg)	Lab Receipt Pressure (" Hg)	Summa Can ID	Flow Controller ID
01	Low Vac	6/29/16 1539	6/29/16 1544			SG		H	H	H		-27	-5	10.6	1451	4000
02	Mid Vac	6/29/16 1546	6/29/16 1550			SG		H	H	H		-30	-5	3.8	1020	5033
03	High Vac	6/29/16 1555	6/29/16 1600			SG		H	H	H		-27	-5	10.9	1756	5034

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes:
SG = SOIL GAS
IA = INDOOR AIR
AMB = AMBIENT
SS = SUB SLAB
D = DUP
BL = BLANK
O = Other_____

Relinquished by: (signature)	Date/Time:
[signature]	6/30/16 0800
Received by: (signature)	Date/Time:
[signature]	7/5/16 1307
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements
MA
CT

Special Requirements
☐ MA MCP Required
☐ CT RCP Required
☐ Enhanced Data Package Required
Other

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

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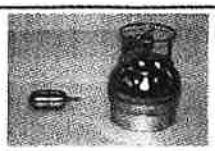

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con-test® ANALYTICAL LABORATORY

39 Spruce St.
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01028
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AIR Only Receipt Checklist

CLIENT NAME Mountain Research RECEIVED BY: RLF DATE: 7/5/16

1) Was the chain(s) of custody relinquished and signed? Yes X No ____

2) Does the chain agree with the samples? Yes X No ____
If not, explain:

3) Are all the samples in good condition? Yes X No ____
If not, explain:

4) Are there any samples "On Hold"? Yes ____ No X Stored where: ____

5) Are there any RUSH or SHORT HOLDING TIME samples? Yes ____ No X
Who was notified ____ Date ____ Time ____

6) Location where samples are stored: Air lab

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: ____

7) Number of cans Individually Certified or Batch Certified? none

Containers received at Con-Test

		# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)		3	6L
Tedlar Bags			
TO-17 Tubes			
Regulators		3	grab
Restrictors			
Hg/Hopcalite Tube (NIOSH 6009)			
(TO-4A/ TO-10A/TO-13) PUFs			
PCB Florisil Tubes (NIOSH 5503)			
Air cassette			
PM 2.5/PM 10			
TO-11A Cartridges			
Other			

Unused Summas/PUF Media:

Unused Regulators:

1) Was all media (used & unused) checked into the WASP?

2) Were all returned summa cans, Restrictors & Regulators and PUF's documented as returned in the Air Lab Inbound/Outbound Excel Spreadsheet?

Laboratory Comments:

1451 1756 4000 3034
1020 5033

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The coolers'/boxes' custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	NA	
4) Cooler Temperature is acceptable.	NA	
5) Cooler Temperature is recorded.	NA	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) Samples are received within Holding Time.	T	
10) Sample containers have legible labels.	T	
11) Containers/media are not broken or leaking and valves and caps are closed tightly.	T	
12) Sample collection date/times are provided.	T	
13) Appropriate sample/media containers are used.	T	
14) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
15) Trip blanks provided if applicable.	T	

Who notified of False statements? **Date/Time:**

Doc #278 Rev. 5 October 2014 **Log-In Technician Initials:** **Date/Time:**

PLF 7/5/16 1302

APPENDIX M

FEASIBILITY TEST AQUEOUS SAMPLING ANALYTICAL DATA SHEETS

MOUNTAIN RESEARCH, LLC

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EPA Lab #PA00165

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PADEP #33-00258
EPA Lab #PA00155

18 July 2016

Lab ID #: 1606548

Betty Hess
Cook's Country Store
16570 Hell Lane
James Creek, PA 16657

RE: Site Characterization

Enclosed are the results of analyses for samples received by the laboratory on 06/30/16 07:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Megan Davidson-Rager

Megan Davidson-Rager
Project Manager

Authorized Reviewer

MOUNTAIN RESEARCH, LLC

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 07/18/16 15:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
Low Vac	1606548-01	Aqueous	Grab	06/29/16 09:20	06/30/16 07:00
Mid Vac	1606548-02	Aqueous	Grab	06/29/16 11:15	06/30/16 07:00
High Vac	1606548-03	Aqueous	Grab	06/29/16 12:30	06/30/16 07:00
Final Influent	1606548-04	Aqueous	Grab	06/29/16 14:30	06/30/16 07:00
Final Effluent	1606548-05	Aqueous	Grab	06/29/16 14:30	06/30/16 07:00
Cessna Well	1606548-06	Aqueous	Grab	06/29/16 15:30	06/30/16 07:00

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 07/18/16 15:54

Low Vac

1606548-01 (Aqueous) Sampled: 06/29/16 09:20

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**636**	50.0	6.00	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
1,3,5-Trimethylbenzene	**259**	10.0	1.05	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Benzene	**1380**	50.0	6.50	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Ethylbenzene	**425**	10.0	1.05	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Isopropylbenzene (Cumene)	**26.6**	2.00	0.170	NA	µg/L	07/05/16 22:39	07/05/16 22:39	EPA 8260 B	A	MTG	
MTBE	**18.0**	10.0	0.616	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Naphthalene	**185**	10.0	10.0	NA	µg/L	07/05/16 22:39	07/08/16 05:06	EPA 8260 B	A	MTG	D1
Toluene	**1300**	50.0	5.75	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylene o	**752**	50.0	8.25	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylene p/m	**2080**	100	13.2	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	D1
Xylenes, Total	**2830**	150	NA	NA	µg/L	07/05/16 22:39	07/08/16 05:32	EPA 8260 B	A	MTG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*70.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*103 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*91.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			
Surrogate: Toluene-d8		*96.8 %*		*80-120*		*07/05/16 22:39*	*07/05/16 22:39*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 07/18/16 15:54

Mid Vac

1606548-02 (Aqueous) Sampled: 06/29/16 11:15

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**401**	50.0	6.00	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**129**	50.0	5.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Benzene	**773**	50.0	6.50	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Ethylbenzene	**233**	50.0	5.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	**35.0**	2.00	0.170	NA	µg/L	07/07/16 17:43	07/07/16 17:43	EPA 8260 B	A	JMG	
MTBE	**15.3**	2.00	0.123	NA	µg/L	07/07/16 17:43	07/07/16 17:43	EPA 8260 B	A	JMG	
Naphthalene	**203**	50.0	50.0	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Toluene	**661**	50.0	5.75	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylene o	**344**	50.0	8.25	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylene p/m	**1150**	100	13.2	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	D1
Xylenes, Total	**1490**	150	NA	NA	µg/L	07/07/16 17:43	07/12/16 12:37	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*64.8 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*101 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*101 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			
Surrogate: Toluene-d8		*104 %*		*80-120*		*07/07/16 17:43*	*07/07/16 17:43*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:** 07/18/16 15:54
James Creek PA, 16657	Lab Project Manager: Tegan Schott	

High Vac

1606548-03 (Aqueous) Sampled: 06/29/16 12:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**1150**	100	12.0	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
1,3,5-Trimethylbenzene	**328**	100	10.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Benzene	**2510**	100	13.0	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Ethylbenzene	**983**	100	10.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Isopropylbenzene (Cumene)	<100	100	8.50	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
MTBE	**9.65**	2.00	0.123	NA	µg/L	07/08/16 07:17	07/08/16 07:17	EPA 8260 B	A	JMG	
Naphthalene	**482**	100	100	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Toluene	**4970**	100	11.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylene o	**1450**	100	16.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylene p/m	**3590**	200	26.5	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	D1
Xylenes, Total	**5040**	300	NA	NA	µg/L	07/08/16 07:17	07/12/16 13:04	EPA 8260 B	A	JMG	CC, D1
Surrogate: 1,2-Dichloroethane-d4		*57.8 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			*S*
Surrogate: 4-Bromofluorobenzene		*102 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*92.0 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			
Surrogate: Toluene-d8		*106 %*		*80-120*		*07/08/16 07:17*	*07/08/16 07:17*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	07/18/16 15:54

Final Influent

1606548-04 (Aqueous) Sampled: 06/29/16 14:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
Metals by ICP											
Iron, Dissolved	**9.69**	0.200	0.0100	NA	mg/L	07/14/16 14:11	07/14/16 14:11	EPA 200.7 (Rev 4.4)	A	SEG	D1
Iron	**84.4**	2.00	0.420	NA	mg/L	07/07/16 12:15	07/14/16 14:13	EPA 200.7 (Rev 4.4)	A	SEG	D1

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 07/18/16 15:54

Final Effluent

1606548-05 (Aqueous) Sampled: 06/29/16 14:30

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
Mountain Research, LLC											
General Chemistry by Standard/EPA/ASTM Methods											
pH	**7.38**	0.100	NA	NA	pH Units	06/30/16 09:32	06/30/16 09:32	SM4500-H B	A	CML	H1, pHT
Volatile Organic Compounds by GC/MS											
1,2,4-Trimethylbenzene	**54.5**	2.00	0.240	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
1,3,5-Trimethylbenzene	**22.3**	2.00	0.210	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Benzene	**2.05**	1.00	0.260	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Ethylbenzene	**10.7**	2.00	0.210	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Isopropylbenzene (Cumene)	**3.27**	2.00	0.170	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	C, L
Naphthalene	**3.33**	2.00	2.00	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Toluene	**12.3**	2.00	0.230	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Xylene o	**15.6**	2.00	0.330	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Xylene p/m	**47.9**	4.00	0.530	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	
Xylenes, Total	**63.5**	6.00	NA	NA	µg/L	07/06/16 03:53	07/06/16 03:53	EPA 8260 B	A	MTG	CC
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*100 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*94.2 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			
Surrogate: Toluene-d8		*99.2 %*		*80-120*		*07/06/16 03:53*	*07/06/16 03:53*	*EPA 8260 B*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store	Project Name: Site Characterization	**Lab ID#:** 1606548
16570 Hell Lane	Project Number: 4547.15.01	**Reported:**
James Creek PA, 16657	Lab Project Manager: Tegan Schott	07/18/16 15:54

Cessna Well

1606548-06 (Aqueous) Sampled: 06/29/16 15:30

Mountain Research, LLC

Volatile Organic Compounds by GC/MS

Analyte	Result	PQL	MDL	Regulatory Limit	Units	Prepared	Analyzed	Method	Lab	Analyst	Notes
1,2,4-Trimethylbenzene	<2.00	2.00	0.240	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
1,3,5-Trimethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Benzene	<2.00	2.00	0.260	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Ethylbenzene	<2.00	2.00	0.210	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Isopropylbenzene (Cumene)	<2.00	2.00	0.170	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
MTBE	<2.00	2.00	0.123	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Naphthalene	<2.00	2.00	2.00	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Toluene	<2.00	2.00	0.230	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylene o	<2.00	2.00	0.330	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylene p/m	<4.00	4.00	0.530	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	
Xylenes, Total	<6.00	6.00	NA	NA	µg/L	07/08/16 00:43	07/08/16 00:43	EPA 8260 B	A	JMG	CC
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: 4-Bromofluorobenzene		*97.5 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: Dibromofluoromethane		*99.8 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			
Surrogate: Toluene-d8		*101 %*		*80-120*		*07/08/16 00:43*	*07/08/16 00:43*	*EPA 8260 B*			

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Megan Davidson-Rager

Megan Davidson-Rager, Project Manager

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Cook's Country Store 16570 Hell Lane James Creek PA, 16657	Project Name: Site Characterization Project Number: 4547.15.01 Lab Project Manager: Tegan Schott	**Lab ID#:** 1606548 **Reported:** 07/18/16 15:54

Certifications

Code	Description	Number	Expires
MDDOE	Maryland Department of the Environment	257	06/30/2016
PADEP-Altoona	Pennsylvania Department of Environmental Protection	009	03/31/2017
WVDEP	West Virginia Department of Environmental Protection	225	12/31/2016
PADEP-DuBois	Pennsylvania Department of Environmental Protection	008	09/30/2016

Notes and Definitions

S	Surrogate recovery outside of laboratory acceptance criteria.
pHT	This pH was analyzed at 17.3 ° C.
L	The LCS did not meet laboratory acceptance criteria.
H1	This sample was received and analyzed, for this analyte, outside of the recommended holding time.
D1	The sample was analyzed at a dilution.
CC	Calculated analytes are reported based on unrounded results of the individual analytes used in the calculation. Therefore, using the rounded values of the analytes as reported may lead to a result that varies slightly from the reported result.
C	The associated analytical results may be biased low.
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
dry	Sample results reported on a dry weight basis
A	Analysis Performed by Mountain Research Altoona Laboratory - PADEP #07-00418
D	Analysis Performed by Mountain Research DuBois Laboratory - PADEP # 33-00258

BALL POINT PEN ONLY

00001

Billing Group:	Phase:	PROJECT NAME: Feasibility Testing
MR Project #: 4547.15.01		SITE LOCATION: Robertsdale, PA
CLIENT: Cooks Country Store		SAMPLER(S): JH

NOTES
Received On Ice: (Y) / N
Sample Temp: 4.5c
PWSID #:
Seal In Tack: Y / N
Other:
Comments:

MOUNTAIN RES
825 25th Street, Altoona, PA 16601 (8
110 McCracken Run Road, Dubois, PA 15801 (8
1674 FAX (814) 949-9591
375-0823

CHAIN OF CUSTO

MR PROJ. MGR Mike Crowe
Shipping Carrier:

Turn Around Time:
10 Day ✓
5 Day
1 Day

Comments: Vac & Final Influent samples have strong petroleum odors.

Analyses Requ

SAMPLE ID.NO.	DATE	TIME	GRAB	COMP	MATRIX	NUMBER OF CONTAINERS	PRODUCT CODE	8260B	Dissolved Fe	Total Fe	pH			pH	Preserve	LAB NUMBER
Low Vac	6/29/16	0920	X		Aq	2-40mL VOA	2A	X							HCl	01
Mid Vac		1115														02
High Vac		1230														03
Final Influent		1430				1-250mL NaOH			X					<2	HNO_3	04
		1430				1-250mL poly				X				<2	HNO_3	
Final Effluent		1430				2-40mL VOA	2A	X	~~X~~ JH						~~HNO_3~~ HCl JH	05
		1430				1-250mL poly					X			✓	None	
Cossna Well		1530				2-40mL VOA	2A	X							HCl	06

RELINQUISHED BY:	DATE: 6/30/16	TIME: 0700	ACCEPTED BY:	DATE: 6/30/16	TIME: 0700	Lab WO #: 1606548	Log In Time: 11:18
RELINQUISHED BY:	DATE	TIME	ACCEPTED BY:	DATE	TIME	Labeled By:	Staff: EC
							Date: 6/30/16

White - Lab; Blue - File; Yellow - Project Manager; Pink - Staff

C:\Users\jhaney\Desktop\Chain of Custody

MOUNTAIN RESEARCH SAMPLE RECEIPT PROTOCOL

WORK ORDER: 16065-48

CLIENT: Cokes County Slag

DATE SAMPLED: 6/29/16 DATE RECEIVED: 6/30/16 TIME RECEIVED: 0700

1. CHECK ALL THAT APPLY: PA ☑ WV ☐ MD ☐ PUBLIC WATER SUPPLY ☐ RUSH ☐

2. WERE ANY OF THE SAMPLE CONTAINERS DAMAGED? (ARE CUSTODY SEALS BROKEN?) YES ☐ NO ☑

IF YES, EXPLAIN: _____

3. NUMBER OF CONTAINERS RECEIVED: 13

4. WERE THE SAMPLES RECEIVED ON ICE? YES ☑ NO ☐

IF NO, EXPLAIN: _____

5. RECEIVING TEMPERATURE: 4.9 °C BOTTLE(S) TEMPED: _____

6. WERE THE SAMPLES PROPERLY PRESERVED? YES ☑ NO ☐

IF NO, EXPLAIN: _____

7. WERE THE SAMPLES COLLECTED IN THE CORRECT CONTAINERS? YES ☑ NO ☐

IF NO, EXPLAIN: _____

8. WAS THE COC FILLED OUT PROPERLY? YES ☑ NO ☐

IF NO, EXPLAIN: _____

9. DID THE SAMPLE LABEL(S) CONTAIN ADEQUATE INFO? (CLIENT/DATE/TIME/PRESERVATIVE) YES ☑ NO ☐

IF NO, EXPLAIN: _____

10. WERE ANY OF THE SAMPLES RECEIVED OUTSIDE OF HOLDING TIME? YES ☑ NO ☐

IF YES, EXPLAIN: pH

11. DO THE SAMPLES REQUIRE ANALYSES THAT HAVE A SHORT HOLDING TIME? YES ☑ NO ☐

IF YES, WHAT ANALYSES? pH **PLEASE NOTIFY LABORATORY ANALYSTS!**

12. IS SUBCONTRACTING REQUIRED? YES ☐ NO ☑

IF YES, WHAT ANALYSES? _____

13. WAS THE CLIENT CONTACTED? YES ☐ NO ☑

IF YES, FILL OUT THE FOLLOWING:

MR EMPLOYEE INITIALS: CLIENT SPOKEN TO: DATE/TIME:

OUTCOME:

SIGNATURE: [signature]

L60.30 A r0 Sample Receipt Form

For MR Use Only

APPENDIX N

REMEDIAL DESIGN CALCULATIONS

CALCULATION 1

ACFM TO SCFM CONVERSION SHEET

Project Number:	4547.15.01
Owner:	Cook's Country Store
Site:	Robertsdale, PA
Prepared by:	JH
Checked by:	MAM
For:	RW-1, Overburden Design

Convert inches of Hg to psi: 8.6 in. of Hg Conversion Factor in. Hg to psi = 0.4911541
= 4.22392526 psi
Barometric Pressure: 29.7 in of Hg
= 14.5872768

$$\text{ACFM} = \text{SCFM} * \frac{Ps - (RHs * PVs)}{Pb - (RHa * PVa)} * \frac{Ta}{Ts} * \frac{Ps}{Pa}$$

Symbol	Standards				
	Pressure (psia)	14.696	14.696	14.696	14.696
	Temperature (F)	70	68	75	60
	RH (%)	0	0	36	0
	Sat Vapor Pressure (psia)	0.3631	0.3011	0.3011	0.2563

Select Standard then Input measured actual conditions

Ps	Pressure (psia)	14.696	14.696	psia
Ts	Temperature (F)	68	528	R
RHs	RH (%)	36	0.36	decimal
PVs	Sat Vapor Pressure (psia)	0.3011	0.3011	psia

Input Actual Readings from field data

Pb	Barometric Pressure (psia)	14.5872768	-	14.58727677	psia	
Pa	Gauge Pressure (psig)*	-4.22392526	-	10.36335151	psia	convert from guage to actual
Ta	Temperature (F)**	77	-	537	R	
RHa	RH (%)***	70	-	0.7	decimal	
PVa	Sat Vapor Pressure (psia)	0.2563	-	0.2563	psia	from chart

Input one, solve for other	Input	Solved for	
ACFM		32.61	ACFM
SCFM	22.33	-	SCFM

* reading from vacuum guage
** temperature of pumped air
*** Humidity of pumped air (assuming 100% due to saturated soil)
Data Input

CALCULATION 2

RW-1 SVE Reynolds No. Calculations - Single Well

Project No:	4575.15.01	Prepared by:	Jason Haney
Client:	Cooks Country Store	Checked by:	Marcus Marasco
Location:	Robertsdale, PA		

Reynolds Number (Re)

Re = VDh / v

Dh = Hydraulic Diameter (ft)
V = Velocity (ft/s)
v = Kinematic viscosity (ft^2/sec)

*Dh = 4 * (π * d^2 / 4) / (2 * π * (d/2))*

note: viscosity changes with density of air, which is a function of temperature and pressure viscosity used is based on temperatures at standard pressure this error is minor in calculation of Reynolds No.

Temp during test **50** °F (use table to find v)

Input	D (in)	Q (cfm)	v (ft^2/sec)
	2	22	0.000152

Convert	D (ft)	V (ft/sec)
	0.16666667	17.067516

Dh **0.16666667**

Re = **18714.3815**

laminar	Re <	2300	
transient	2300	< Re <	4000
turbulent	Re >	4000	

Type of Flow: **turbulent**
Solution: **Use Colebrook Equation**

Viscocity Table

Temperature - t - (°F)	Dynamic - μ - (lb.s/ft²) x 10⁻⁷	Kinematic - ν - (ft²/s) x 10⁻⁴
-40	3.29	1.12
-20	3.34	1.19
0	3.38	1.26
10	3.44	1.31
20	3.5	1.36
30	3.58	1.42
40	3.6	1.46
50	3.68	1.52
60	3.75	1.58
70	3.82	1.64
80	3.86	1.69
90	3.9	1.74
100	3.94	1.79
120	4.02	1.89
140	4.13	2.01
160	4.22	2.12
180	4.34	2.25
200	4.49	2.4
300	4.97	3.06
400	5.24	3.65
500	5.8	4.51
750	6.81	6.68
1,000	7.85	9.3
1,500	9.5	15.1

CALCULATION 3

RW-1 SVE, Friction Factor Calculation Using Colebrook Equation

Project No:	4575.15.01	Prepared by:	Jason Haney
Client:	Cooks Country Store	Checked by:	Marcus Marasco
Location:	Robertsdale, PA		

Colebrook Equation

$$1 / \lambda^{1/2} = -2 \log ((2.51 / (Re\, \lambda^{1/2})) + ((k / d_h) / 3.72)) \quad (1)$$

λ = Darcy-Weisbach friction coefficient
Re = Reynolds Number
k = roughness of duct, pipe or tube surface (m, ft), from chart
dh = hydraulic diameter (m, ft)
dh = 4 * (π * d^2 / 4) / (2 * π * (d/2))

Solve for Darcy-Weisbach friction coefficient
Use Moody Diagram

Re	**18714**	from Reynolds No. Calculations
k	**1.42E-05**	from k value chart for PVC Pipe
d	**0.166666667**	diameter of pipe
dh	**0.167**	
k/dh	**8.49E-05**	

From Moody Diagram
Friction Coefficient:
0.027

Surface	Roughness Coefficients- *k*	
	millimeters	feet
Copper, Lead, Brass, Aluminum (new)	0.001 - 0.002	$3.33 - 6.7\ 10^{-6}$
PVC and Plastic Pipes	0.0015 - 0.007	$0.5 - 2.33\ 10^{-5}$
Stainless steel	0.015	$5\ 10^{-5}$
Steel commercial pipe	0.045 - 0.09	$1.5 - 3\ 10^{-4}$
Stretched steel	0.015	$5\ 10^{-5}$
Weld steel	0.045	$1.5\ 10^{-4}$
Galvanized steel	0.15	$5\ 10^{-4}$
Rusted steel (corrosion)	0.15 - 4	$5 - 133\ 10^{-4}$
New cast iron	0.25 - 0.8	$8 - 27\ 10^{-4}$
Worn cast iron	0.8 - 1.5	$2.7 - 5\ 10^{-3}$
Rusty cast iron	1.5 - 2.5	$5 - 8.3\ 10^{-3}$
Sheet or asphalted cast iron	0.01 - 0.015	$3.33 - 5\ 10^{-5}$
Smoothed cement	0.3	$1\ 10^{-3}$
Ordinary concrete	0.3 - 1	$1 - 3.33\ 10^{-3}$
Coarse concrete	0.3 - 5	$1 - 16.7\ 10^{-3}$
Well planed wood	0.18 - 0,9	$6 - 30\ 10^{-4}$
Ordinary wood	5	$16.7\ 10^{-3}$

4*(3.14*B21^2/4)/(2*3.14*B21/2)

CALCULATION 4

Treatment Train Reynolds No. Calculations

Project No:	4575.15.01	Prepared by:	Jason Haney
Client:	Cooks Country Store	Checked by:	Marcus Marasco
Location:	Robertsdale, PA		

Reynolds Number (Re)

Re = VDh / v

Dh = Hydraulic Diameter (ft)
V = Velocity (ft/s)
v = Kinematic viscosity (ft^2/sec)

*Dh = 4 * (π * d^2 / 4) / (2 * π * (d/2))*

note: viscosity changes with density of air, which is a function of temperature and pressure viscosity used is based on temperatures at standard pressure
this error is minor in calculation of Reynolds No.

Temp during test **50** °F (use table to find v)

Input	D (in)	Q (cfm)	v (ft^2/sec)
	3	179	0.000152

Convert	D (ft)	V (ft/sec)
	0.25	60.684501

Dh **0.25**

Re = **99810.0346**

laminar	Re <	2300	
transient	2300	< Re <	4000
turbulent	Re >	4000	

Type of Flow: turbulent
Solution: Use Colebrook Equation

Viscocity Table

Temperature - t - (°F)	Dynamic - μ - (lb.s/ft²) x 10⁻⁷	Kinematic - ν - (ft²/s) x 10⁻⁷
-40	3.29	1.12
-20	3.34	1.19
0	3.38	1.26
10	3.44	1.31
20	3.5	1.36
30	3.58	1.42
40	3.6	1.46
50	3.68	1.52
60	3.75	1.58
70	3.82	1.64
80	3.86	1.69
90	3.9	1.74
100	3.94	1.79
120	4.02	1.89
140	4.13	2.01
160	4.22	2.12
180	4.34	2.25
200	4.49	2.4
300	4.97	3.06
400	5.24	3.65
500	5.8	4.51
750	6.81	6.68
1,000	7.85	9.3
1,500	9.5	15.1

CALCULATION 5

Treatment Train Friction Factor Calculation Using Colebrook Equation

Project No:	4575.15.01	Prepared by:	Jason Haney
Client:	Cooks Country Store	Checked by:	Marcus Marasco
Location:	Robertsdale, PA		

Colebrook Equation

$$1 / \lambda'^{2} = -2 \log ((2.51 / (Re\, \lambda'^{2})) + ((k / d_h) / 3.72)) \quad (1)$$

λ = Darcy-Weisbach friction coefficient
Re = Reynolds Number
k = roughness of duct, pipe or tube surface (m, ft), from chart
dh = hydraulic diameter (m, ft)
dh = 4 * (π * d^2 / 4) / (2 * π * (d/2))

Solve for Darcy-Weisback friction coefficient
Use Moddy Diagram

Re	**87334**	from Reynolds No. Calculations
k	**1.42E-05**	from k value chart for PVC Pipe
d	**0.25**	diameter of pipe
dh	**0.250**	
k/dh	**5.66E-05**	

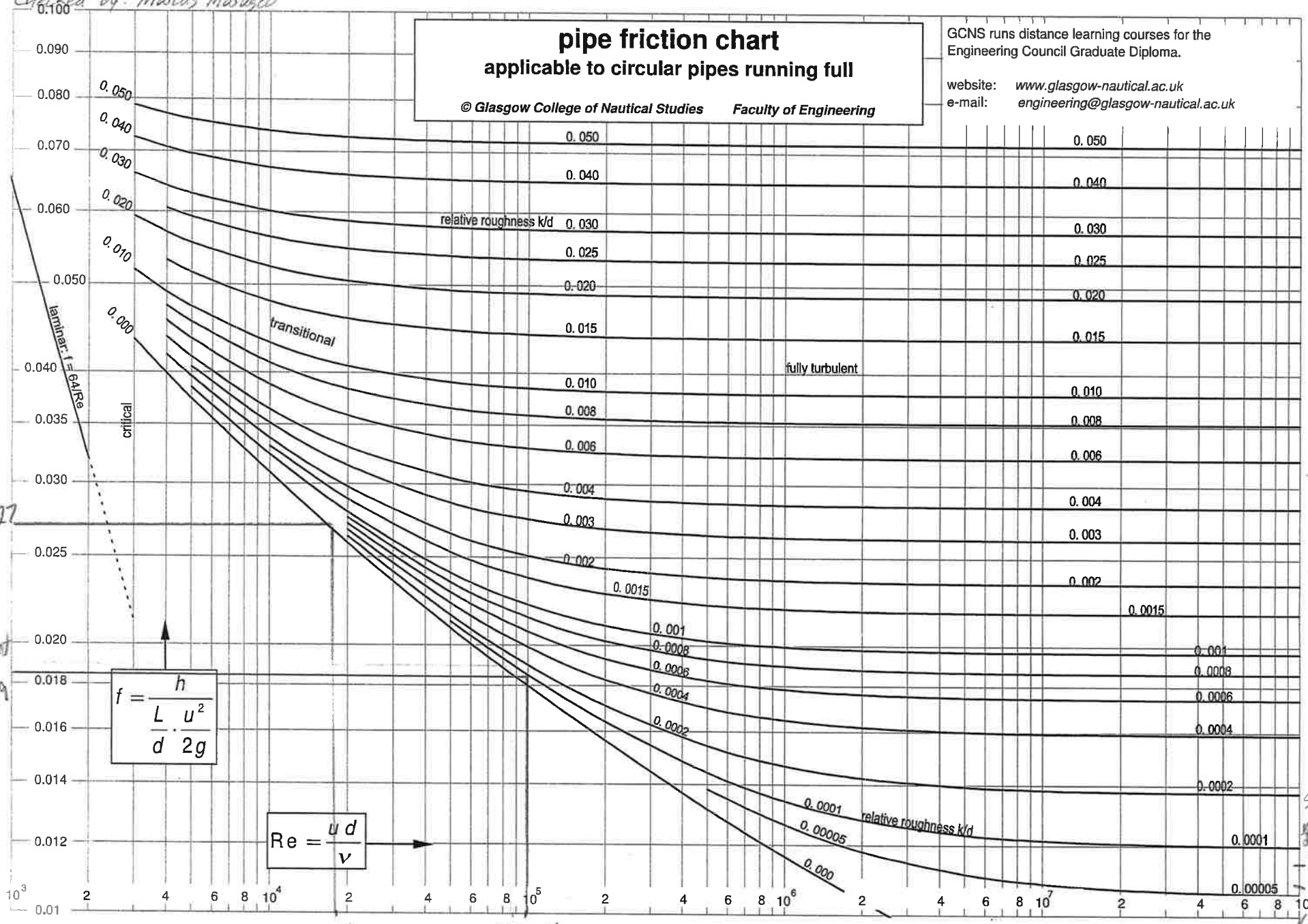
From Moody Diagram
Friction Coefficient:
0.019

4*(3.14*B21^2/4)/(2*3.14*B21/2)

Surface	Roughness Coefficients- *k*	
	millimeters	feet
Copper, Lead, Brass, Aluminum (new)	0.001 - 0.002	$3.33 - 6.7\ 10^{-6}$
PVC and Plastic Pipes	0.0015 - 0.007	$0.5 - 2.33\ 10^{-5}$
Stainless steel	0.015	$5\ 10^{-5}$
Steel commercial pipe	0.045 - 0.09	$1.5 - 3\ 10^{-4}$
Stretched steel	0.015	$5\ 10^{-5}$
Weld steel	0.045	$1.5\ 10^{-4}$
Galvanized steel	0.15	$5\ 10^{-4}$
Rusted steel (corrosion)	0.15 - 4	$5 - 133\ 10^{-4}$
New cast iron	0.25 - 0.8	$8 - 27\ 10^{-4}$
Worn cast iron	0.8 - 1.5	$2.7 - 5\ 10^{-3}$
Rusty cast iron	1.5 - 2.5	$5 - 8.3\ 10^{-3}$
Sheet or asphalted cast iron	0.01 - 0.015	$3.33 - 5\ 10^{-5}$
Smoothed cement	0.3	$1\ 10^{-3}$
Ordinary concrete	0.3 - 1	$1 - 3.33\ 10^{-3}$
Coarse concrete	0.3 - 5	$1 - 16.7\ 10^{-3}$
Well planed wood	0.18 - 0,9	$6 - 30\ 10^{-4}$
Ordinary wood	5	$16.7\ 10^{-3}$

Cooks Country Store
4547.15.91
Robertsdale, PA
Proposed by: Jason Huey
Checked by: Marcus Masasco

Calculation 6



Single line
f = 0.027

Treatment line
f = 0.019

Re = 1.87x10^4
single line

Re = 9.9x10^4
Treatment Line

Single Line
k/dh = 8.5x10^-5

Treat. Line
k/dh = 5.7x10^-5

CALCULATION 7

Overburden Vacuum Pump Design Calculations

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

CONSTANTS

Density ρ:	0.002311	lbs/ft^3
Dynamic Viscocity, μ:	3.75E-07	lbs*sec/ft^2
Gravity, g:	32.2	ft/sec^2
Roughness Coef., k:	1.42E-05	ft

WELL EXTRACTION LINES **Overburden Wells**

Well	Flow (ACFM)	Pipe Diameter (in)	Vacuum Loss (in of Hg)
VEGE-1	32.61	2	0.18
VEGE-2	32.61	2	0.18
VEGE-3	32.61	2	0.29
VEGE-4	32.61	2	0.28
VEGE-5	32.61	2	0.36
VEGE-6	32.61	2	0.29
VEGE-7	32.61	2	0.39
VEGE-8	32.61		0.45

TREATMENT TRAIN LINE

	Flow (ACFM)	Pipe Diameter (in)	Vacuum Loss (in of Hg)
Train Line	260.88	4	2.65

TOTAL VACUUM

Vacuum Req at Well:	8.6	in of Hg
Extraction Line Loss:	0.45	in of Hg
Treatment Train Loss:	2.65	in of Hg
Safety Allocation (10%):	0.31	in of Hg
Vacuum at Pump Inlet:	**12.01**	**in of Hg**

PUMP REQUIREMENTS

Design Notes:

Test Well:	260.88 ACFM @	12.47	in of Hg

Notes:

Pump should be capable of	**275 ACFM @**	**13**	**in of Hg**

CALCULATION 8

SVE Vacuum Pump Design Calculations, VEGE-1

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-1

Well No: VEGE-1

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	35	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	2	26.20
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				73.20

TOTAL EQUIV LENGTH (ft) **108.20** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**169.09**	**ft of air**
Head Loss, HL in psi =	**0.09**	**psi**
Head Loss, in of Water =	**2.49**	**in of H2O**
Head Loss, in of Hg =	**0.18**	**in of Hg**

CALCULATION 9

SVE Vacuum Pump Design Calculations, VEGE-2

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-2

Well No: VEGE-2

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	10	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **109.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**170.97**	**ft of air**
Head Loss, HL in psi =	**0.09**	**psi**
Head Loss, in of Water =	**2.51**	**in of H2O**
Head Loss, in of Hg =	**0.18**	**in of Hg**

CALCULATION 10

SVE Vacuum Pump Design Calculations, VEGE-3

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-3

Well No: VEGE-3

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	70	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **169.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**264.73**	**ft of air**
Head Loss, HL in psi =	**0.14**	**psi**
Head Loss, in of Water =	**3.89**	**in of H2O**
Head Loss, in of Hg =	**0.29**	**in of Hg**

CALCULATION 11

SVE Vacuum Pump Design Calculations, VEGE-4

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-4

Well No: VEGE-4

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	65	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **164.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**256.92**	**ft of air**
Head Loss, HL in psi =	**0.14**	**psi**
Head Loss, in of Water =	**3.78**	**in of H2O**
Head Loss, in of Hg =	**0.28**	**in of Hg**

CALCULATION 12

SVE Vacuum Pump Design Calculations, VEGE-5

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-5

Well No: VEGE-5

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	115	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **214.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**335.06**	**ft of air**
Head Loss, HL in psi =	**0.18**	**psi**
Head Loss, in of Water =	**4.93**	**in of H2O**
Head Loss, in of Hg =	**0.36**	**in of Hg**

CALCULATION 13

SVE Vacuum Pump Design Calculations, VEGE-6

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-6

Well No: VEGE-6

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	70	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **169.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**264.73**	**ft of air**
Head Loss, HL in psi =	**0.14**	**psi**
Head Loss, in of Water =	**3.89**	**in of H2O**
Head Loss, in of Hg =	**0.29**	**in of Hg**

CALCULATION 14

SVE Vacuum Pump Design Calculations, VEGE-7

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-7

Well No: VEGE-7

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	130	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **229.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**358.50**	**ft of air**
Head Loss, HL in psi =	**0.19**	**psi**
Head Loss, in of Water =	**5.27**	**in of H2O**
Head Loss, in of Hg =	**0.39**	**in of Hg**

CALCULATION 15

SVE Vacuum Pump Design Calculations, VEGE-8

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

INDIVIDUAL LINE FROM MANIFOLD TO VEGE-8

Well No: VEGE-8

DATA INPUT

Pipe Diameter:	2	inch	
Flow:	32.61	ACFM	Q
Pipe Diameter:	0.16667	ft	d
Pipe Area:	0.0218	ft^2	A
Hydraulic Diamter:	0.1667	ft	dh
Velocity:	24.92	ft/sec	V, Flow / Pipe Area
viscosity:	0.000152	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	27330		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	8.52E-05		Roughness Ration = k / dh
Friction Factor:	**0.0270**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	165	ft	

MINOR LOSSES

Fittings for 2" dia. PVC pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	13.10	4	52.40
45° Bend	20	5.10	0	0.00
Ball Valve	11	3.00	1	3.00
Entrance	45	22.00	2	44.00
Total				99.40

TOTAL EQUIV LENGTH (ft) **264.40** ft L

TOTAL HEAD LOSS: Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**413.20**	**ft of air**
Head Loss, HL in psi =	**0.22**	**psi**
Head Loss, in of Water =	**6.07**	**in of H2O**
Head Loss, in of Hg =	**0.45**	**in of Hg**

CALCULATION 16

SVE Vacuum Pump Design Calculations, Treatment Train

Project Number:	4575.15.01
Owner:	Cooks Country Store
Site:	Robertsdale, PA
Prepared by:	Jason Haney
Checked by:	Marcus Marasco

PIPE FRICTION LOSS CALCULATIONS

LINE FROM SVE INTAKE MANIFOLD THROUGH TREATMENT TRAIN

DATA INPUT

Pipe Diameter:	3	inch	
Flow:	260.88	ACFM	Q
Pipe Diameter:	0.25000	ft	d
Pipe Area:	0.0491	ft^2	A
Hydraulic Diamter:	0.2500	ft	dh
Velocity:	88.62	ft/sec	V, Flow / Pipe Area
viscosity:	0.000164	ft^2/sec	v, Kinematic viscosity based on standard temp and pressure
Reynolds No.:	135094		Re, dh*V / v
Roughness Coefficient:	1.42E-05	ft	k, Roughness Coefficient for PVC Pipe
Roughness Ratio:	5.68E-05		Roughness Ration = k / dh
Friction Factor:	**0.0190**		f, From Moody Diagram using Re and Roughness Ratio
Pipe Length:	20	ft	

MINOR LOSSES

Fittings for 4" dia. pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	25	6.25	16	100.00
45° Bend	20	5.00	0	0.00
Ball Valve	11	2.75	0	0.00
Entrance/Exit	45	11.25	2	22.50
Total				122.50

TOTAL EQUIV LENGTH (ft) **142.50** ft L

HEAD LOSS FROM PIPE Use Darcy Weisbach Equation, HL = f * (L / d) * (V^2 / 2g)

Head Loss, HL =	**1320.76**	**ft of air**
Head Loss, HL in psi =	**0.70**	**psi**
Head Loss, in of Water =	**19.42**	**in of H2O**
Head Loss, in of Hg =	**1.43**	**in of Hg**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(in of Hg)
Vapor / Liquid Seperator	1	0.2	0.2	0.4072
Vapor Phase Carbon Vessels	2	0.2	0.4	0.8144
Total			**0.6000**	**1.2216**

TOTAL HEAD LOSS IN TREATMENT TRAIN

Head Loss, HL in psi =	**1.3015**
Head Loss, in of Hg =	**2.6500**

CALCULATION 17

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-1**

Given information

Flow From Well:	1.81	gpm
	0.2419608	cfm
	0.00403268	cfs

Flow Velocity
V = Q/A

Flow (Q) =	0.2419608	cfm
Pipe Dia =	1	in.
Area =	0.005451389	sq. ft.
V =	44.38516586	ft/min
	0.739752764	ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) =	0.00403268	cfs
C Factor =	150	
Pipe Dia =	0.083333333	ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 35 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	2	5.17
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				14.75

Total Equivalent Length of Pipe: 57.75

HL **0.169320755**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.1693 ft**

Total Dynamic Head (TDH)
TDH = **8.1693 ft**

CALCULATION 18

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-2**

Given information

Flow From Well: 1.81 gpm
0.2419608 cfm
0.00403268 cfs

Flow Velocity
V = Q/A

Flow (Q) = 0.2419608 cfm
Pipe Dia = 1 in.
Area = 0.005451389 sq. ft.

V = 44.38516586 ft/min
0.739752764 ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = 8 ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) = 0.00403268 cfs
C Factor = 150
Pipe Dia = 0.083333333 ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 10 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 37.92

HL **0.111170193**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.1112 ft**

Total Dynamic Head (TDH)
TDH = **8.1112 ft**

CALCULATION 19

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-3**

Given information

Flow From Well: 1.81 gpm
0.2419608 cfm
0.00403268 cfs

Flow Velocity
V = Q/A

Flow (Q) = 0.2419608 cfm
Pipe Dia = 1 in.
Area = 0.005451389 sq. ft.

V = 44.38516586 ft/min
0.739752764 ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = 8 ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) = 0.00403268 cfs
C Factor = 150
Pipe Dia = 0.083333333 ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 70 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 97.92

HL **0.287087861**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.2871 ft**

Total Dynamic Head (TDH)
TDH = **8.2871 ft**

CALCULATION 20

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. VEGE-4

Given information

Flow From Well:	1.81	gpm
	0.2419608	cfm
	0.00403268	cfs

Flow Velocity
V = Q/A

Flow (Q) =	0.2419608	cfm
Pipe Dia =	1	in.
Area =	0.005451389	sq. ft.
V =	44.38516586	ft/min
	0.739752764	ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = 8 ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) =	0.00403268	cfs
C Factor =	150	
Pipe Dia =	0.083333333	ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 65 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	0	0.00
Entrance	45	3.75	1	3.75
Total				14.92

Total Equivalent Length of Pipe: 87.92

HL **0.257768249**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.2578 ft**

Total Dynamic Head (TDH)
TDH = **8.2578 ft**

CALCULATION 21

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-5**

Given information

Flow From Well:	1.81	gpm
	0.2419608	cfm
	0.00403268	cfs

Flow Velocity
V = Q/A

Flow (Q) =	0.2419608	cfm
Pipe Dia =	1	in.
Area =	0.005451389	sq. ft.
V =	44.38516586	ft/min
	0.739752764	ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) =	0.00403268	cfs
C Factor =	150	
Pipe Dia =	0.083333333	ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 115 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 142.92

HL **0.419026112**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.4190 ft**

Total Dynamic Head (TDH)
TDH = **8.4190 ft**

CALCULATION 22

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-6**

Given information

Flow From Well:	1.81	gpm
	0.2419608	cfm
	0.00403268	cfs

Flow Velocity
V = Q/A

Flow (Q) =	0.2419608	cfm
Pipe Dia =	1	in.
Area =	0.005451389	sq. ft.
V =	44.38516586	ft/min
	0.739752764	ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) =	0.00403268	cfs
C Factor =	150	
Pipe Dia =	0.083333333	ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 70 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 97.92

HL **0.287087861**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.2871 ft**

Total Dynamic Head (TDH)
TDH = **8.2871 ft**

CALCULATION 23

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-7**

Given information

Flow From Well: 1.81 gpm
0.2419608 cfm
0.00403268 cfs

Flow Velocity
V = Q/A

Flow (Q) = 0.2419608 cfm
Pipe Dia = 1 in.
Area = 0.005451389 sq. ft.

V = 44.38516586 ft/min
0.739752764 ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) = 0.00403268 cfs
C Factor = 150
Pipe Dia = 0.083333333 ft

S = $(Q/(0.432 \times C \times d^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 130 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 157.92

HL **0.463005529**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.4630 ft**

Total Dynamic Head (TDH)
TDH = **8.4630 ft**

CALCULATION 24

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **VEGE-8**

Given information

Flow From Well: 1.81 gpm
0.2419608 cfm
0.00403268 cfs

Flow Velocity
V = Q/A

Flow (Q) = 0.2419608 cfm
Pipe Dia = 1 in.
Area = 0.005451389 sq. ft.

V = 44.38516586 ft/min
0.739752764 ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) = 0.00403268 cfs
C Factor = 150
Pipe Dia = 0.083333333 ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.002931961

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 165 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	2.58	4	10.33
45° Bend	19	1.58	0	0.00
Ball Valve	10	0.83	1	0.83
Check Valve	102	8.50	0	0.00
Tee Through Flow	21	1.75	0	0.00
Tee Branch Flow	60	5.00	1	5.00
Entrance	45	3.75	1	3.75
Total				19.92

Total Equivalent Length of Pipe: 192.92

HL **0.565624168**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	0	10	0	0.0000
Liquid Phase Carbon Vessels	0	3	0	0.0000
Total			**0.0000**	**0.0000**

Total HL = **0.5656 ft**

Total Dynamic Head (TDH)
TDH = **8.5656 ft**

CALCULATION 25

FLUID FLOW CALCULATIONS

Project No: 4547.15.01
Client: Cooks Country Store
Location: Robertsdale, PA

Vacuum Enhanced Groundwater Extraction Well Headloss Calculations

Well No. **Treatment Train**

Given information

Flow From Well: 20 gpm
2.6736
0.04456

Flow Velocity
V = Q/A

Flow (Q) = 2.6736 cfm
Pipe Dia = 1.5 in.
Area = 0.012265625 sq. ft.

V = 217.9750318 ft/min
3.632917197 ft/sec

Calculate Total Headloss (Hazen Williams)

Static Head = **8** ft

Pipe Losses
Flow (Q) = $0.432 \times C \times d^{2.63} \times S^{0.54}$

Flow (Q) = 0.04456 cfs
C Factor = 150
Pipe Dia = 0.125 ft

S = $(Q/(0.432xCxd^{2.63}))^{1/0.54}$
S = 0.034806537

Frictional Headloss (HL)
HL = S x L

Pipe Length (L) = 40 ft

MINOR LOSSES

Fittings for pipe	Equiv. Pipe Dia.	Equiv. Length (ft)	Quantity	Total Equiv. Length (ft)
90° Bend	31	3.88	14	54.25
45° Bend	19	2.38	0	0.00
Ball Valve	10	1.25	6	7.50
Check Valve	102	12.75	2	25.50
Tee Through Flow	21	2.63	2	5.25
Tee Branch Flow	60	7.50	2	15.00
Entrance	45	5.63	2	11.25
Total				118.75

Total Equivalent Length of Pipe: 166.75

HL **5.803990077**

HEAD LOSS FROM TREATMENT UNITS

Unit	Number of Units	HL per Unit (psi)	Total Head Loss (psi)	(ft of water)
Filter Bags	1	10	10	23.0670
Liquid Phase Carbon Vessels	2	3	6	13.8402
Total			**16.0000**	**36.9072**

Total HL = **42.7112 ft**

Total Dynamic Head (TDH)
TDH = **51 ft**

Total Head (PSI) = **22 psi**

CALCULATION 26
Mountain Research LLC
Liquid Phase Carbon Adsorption Calculations

Project No:	4547.15.01
Owner:	Cooks Country Store
Location:	Robertsdale, PA
Date:	3-Aug-16
Prepared By:	JH
Checked By:	MAM

Influent Contaminate Concentration
(From aqueous high vacuum VEGE test sampling)

Constituent	Contaminate Level	
Benzene	2510	ug/L
Toluene	4970	ug/L
Ethylbenzene	983	ug/L
Xylenes	5040	ug/L
MTBE	10	ug/L
Cumene	1	ug/L
Naphthalene	482	ug/L
1,2,4 - Trimeth	1150	ug/L
1,3,5 - Trimeth	328	ug/L

System Flows

Average System Flow Rate	14.48	gpm
	20851.2	gpd
Flow Rate Through GAC (Transfer Pump)	20	gpm

Isotherm Data For Constituents

Constituent	1/n	K	Adsorptive Capacity x/m	
Benzene	0.53	1.266	0.0802	lb/lb
Toluene	0.42	5	0.1784	lb/lb
Ethylbenzene	0.41	9.26	0.1562	lb/lb
Xylenes	0.24	35.8	0.2770	lb/lb
MTBE	0.5	0.25	0.0008	lb/lb
Cumene	*0.53*	*1.266*	0.0013	lb/lb
Naphthalene	0.42	132	1.7679	lb/lb
1,2,4 - Trimeth			0.1010	lb/lb
1,3,5 - Trimeth	-	-	0.0840	lb/lb

Constituent Mass Flow

Constituent	Mass Flow	
Benzene	4.36E-01	lbs/day
Toluene	8.64E-01	lbs/day
Ethylbenzene	1.71E-01	lbs/day
Xylenes	8.76E-01	lbs/day
MTBE	1.68E-03	lbs/day
Cumene	1.74E-04	lbs/day
Naphthalene	8.38E-02	lbs/day
1,2,4 - Trimeth	2.00E-01	lbs/day
1,3,5 - Trimeth	5.70E-02	lbs/day
Total	2.69E+00	lbs/day

Carbon Usage

Constituent	Mass of Carbon	
Benzene	5.43704	lbs/day
Toluene	4.84024	lbs/day
Ethylbenzene	1.09382	lbs/day
Xylenes	3.16165	lbs/day
MTBE	2.15910	lbs/day
Cumene	0.13725	lbs/day
Naphthalene	0.04737	lbs/day
1,2,4 - Trimeth	1.97846	lbs/day
1,3,5 - Trimeth	0.67849	lbs/day
Total	19.5334	lbs/day

Carbon Sizing / Vessel Sizing

Desired Hydraulic Loading	8	gpm/ft^2	Select desired Hydraulic Loading (8 is recommended max)
Unit Weight of Carbon	30	lbs/ft^3	may vary depending on carbon supplier
Minimum Flow Area	2.5	ft^2	
Minimum Vessel Diameter	1.78	ft	
Selected EBCT	15.00	min	Select desired EBCT
Minimum Vessel Volume	40.10	ft^3	
Height of Carbon with Minimum Area and Volume	16.04	ft	
Mass of Carbon	1203	lbs	
Time to Breakthrough	62	days	

Carbon Unit Selection (adjust based on number of units in series or in parallel)

Selected Vessel Diameter	3.5	ft	select standard vessel diameter (from manufacturer)
Vessel Area	9.62	ft^2	
Hydraulic Loading	2.08	gpm/ft^2	
Vessel Height	5	ft	select standard carbon fill height (from manufacturer)
Volume of Carbon	48	ft^3	
Mass of Carbon (1 unit)	1000	lbs	
Time to Breakthrough (1 unit)	51	days	
Actual EBCT (1 unit)	18	min	
Total Mass of Carbon (2 units)	2000	lbs	
Total Time to Breakthrough (2 units)	102	days	
Total EBCT (2 units)	36	min	

Total Carbon Usage for Site (high estimate, does not acount for reduction in contaminate level over time)

Anticipated Remediation Time	720	days
Carbon Usage	19.53	lbs/day
Total Carbon Usage	14064	lbs