Phase I Initial Site Investigation & Tier I Classification Submittal
66 Leverett Road, Shutesbury, MA
RTN 1-21489

The Town of Shutesbury

January 2023

FUSS & O'NEILL

1550 Main Street
Suite 400
Springfield, MA 01103

Project No. 20091032.A22

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Executive Summary

Fuss & O'Neill, Inc. (Fuss & O'Neill) prepared this *Phase I – Initial Site Investigation Report* (*Phase I ISI*) *and Tier I Classification Submittal* in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0480 et seq.) on behalf of the Town of Shutesbury, for the property at 66 Leverett Road in Shutesbury, Massachusetts (the "property"). This *Phase I ISI* summarizes environmental assessment activities conducted between 2021 and 2023.

Reportable conditions, namely 120-day reportable concentrations of volatile petroleum hydrocarbons (VPHs) in soil, were identified in September 2021 as part of a limited soil assessment. On January 31, 2022, the Massachusetts Department of Environmental Protection (MassDEP) assigned Release Tracking Number (RTN) 1-21489 to the Disposal Site on the property. Thereafter, additional soil and groundwater characterization activities have been performed at the Disposal Site as described herein.

The Town of Shutesbury is a "Potentially Responsible Party (PRP)" and is undertaking MCP response actions. Environmental investigation and response actions were performed in preparation for development of the property.

The Disposal Site is not subject to ongoing immediate response actions, and no Imminent Hazards, Critical Exposure Pathways, or Conditions of Substantial Release Migration (CSRM), as defined in the MCP, have been identified at this time. The VPH Ranges in soil are located at depths greater than three feet below grade and do not pose an ongoing risk of exposure under normal site operative conditions. The Disposal Site is not located within a current or potential drinking water source area, but is within 500 feet of one or more private residential wells and is therefore subject to RCGW-1 criteria. Therefore, per 310 CMR 40.0520, this does trigger Tier I inclusionary criteria.

Additional response actions are warranted at the property, and a Permanent Solution, as defined in 310 CMR 40.0000, has not been achieved at this time for current and foreseeable future conditions. Therefore, a Tier I Classification is appropriate for the Disposal Site while those actions continue.

1 General Disposal Site Information (310 CMR 40.0483 (1)(a))

1.1 Introduction

This report, prepared in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0480 and 310 CMR 40.0510, serves as a *Phase I Initial Site Investigation (ISI) Report and Tier I Classification Submittal* for the Disposal Site identified by the Massachusetts Department of Environmental Protection (MassDEP) as Release Tracking Number (RTN) 1-21489. The Disposal Site is located at 66 Leverett Road in Shutesbury, Massachusetts (the "subject property" or "property").

The Town of Shutesbury owns the property. Fuss & O'Neill, Inc. (Fuss & O'Neill) has been retained to perform "licensed site professional services" per 309 CMR and 310 CMR 40.0000, on behalf of the Town of Shutesbury.

1.2 Potentially Responsible Parties

The PRP contact is designated as follows:

Primary Point of Contact: Ms. Rebecca Torres
Town Administrator
Town of Shutesbury
1 Cooleyville Road
Shutesbury, MA 01072

It should be noted that according to the United States Department of Defense (the DOD), "the Department of Defense is responsible for environmental restoration of properties that were formerly owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary of Defense prior to October 1986. Such properties are known as Formerly Used Defense Sites or FUDS. The U.S. Army is the executive agent for the program and the U.S. Army Corps of Engineers (USACOE) manages and directs the program's administration. DOD and the USACOE are dedicated to protecting human health and the environment by investigating and remediating potential contamination that may remain on these properties."[1] Per this DOD definition, and due to the historical property use further described in *Section 2.1*, the Disposal Site would be classified under FUDS. Therefore, the DOD is being indicated as an additional PRP for the release associated with RTN 1-21489.

The Town of Shutesbury has designated Mr. Timothy Clinton, LSP #2082, as the LSP-of-Record with respect to response actions at the Disposal Site.

[1] https://www.spl.usace.army.mil/Missions/Formerly-Used-Defense-Sites/

1.3 Site Description

The Disposal Site is located on a 20.2-acre plot of land identified by the Town of Shutesbury Tax Assessor as Parcel #O-32. The parcel is located south of Leverett Road and east of Pelham Hill Road in Shutesbury, Massachusetts. The Disposal Site has the following approximate coordinates:

- Latitude and longitude: 42.44765 °N, - 72.41610 ° W
- UTM Coordinates (Massachusetts State Plane Meters): 4702715.22 North 712492.62 East

The parcel is currently vacant and comprised primarily of vegetated woodland. The northern portion of the parcel was formerly improved with one (1) two-story residential building constructed in 1918 according to a property card obtained from the Town of Shutesbury Assessor's Office and one (1) detached three-bay garage inferred to have been constructed between 1962 and 1972 based on aerial imagery provided by Environmental Data Resources, Inc. (EDR) for those years. It is possible that older residential buildings had existed at the northern portion of the parcel prior to 1918 based on historic topographic maps provided by EDR. The residential structure from 1918 was demolished in May of 2005 and the three-bay garage was demolished in August of 2021. The southern portion of the parcel, which is the location of the Disposal Site, was formerly developed as an Air Force Very High Frequency Omni-Directional Range (VOR) facility including a radio tower (OTO, 2021). Trees had been cleared in the 1960 aerial photo and the VOR facility can be seen in the 1962 aerial photo. The facility can no longer be seen in the 1972 aerial photo, and regrowth of cleared vegetation can be observed. At the time of the Phase I ISI, the only components of the VOR facility that remained were a concrete pad that once housed a transformer. Refer to *Appendix B* for historical aerial photographs and mapping used to substantiate the operative history of the Site.

A portion of a United States Geological Survey (USGS) topographical quadrangle map depicting the property location is attached as *Figure 1*. *Figure 2* depicts the property and the known Disposal Site boundaries.

An oil/hazardous material (OHM) 120-day release notification was reported by The Town of Shutesbury on January 28, 2022 and assigned RTN 1-21489 by MassDEP. The release was related to concentrations of VPH in soil exceeding the applicable MassDEP RCS-1 Reportable Concentrations in Soil. This condition was identified at the south end of the property, near a concrete pad associated with the former radio tower, during the Limited Subsurface Assessment performed in September 2021 by O'Reilly, Talbot & Okun Associates, Inc. (OTO) and documented in a letter report completed by OTO in October 2021 and submitted to MassDEP on January 28, 2022.

1.4 Soil Categorization

Under the MCP (310 CMR 40.0933), soil categories (S-1, S-2, or S-3) are based on receptor and exposure information (frequency and intensity). Category S-1 applies to soils that are associated with the highest potential for exposure. Category S-3 applies to soils that have the lowest potential for exposure.

Category S-1 applies to potentially accessible soil where children may be present at high frequency and for high intensity activities, or where land use is not otherwise restricted to preclude high-intensity activity or access by children. The property is slated to be developed with a public library, leading to a

higher frequency of adult and child presence at the property in the foreseeable future. Additionally, land use is not currently restricted to preclude high-intensity activity or access by children, therefore soil category S-1 applies at the subject property.

1.5 Groundwater Categorization

Under the MCP (310 CMR 40.0932), groundwater categories (GW-1, GW-2, and GW-3) are established for different exposure types:

- GW-1 applies to groundwater within a current or potential drinking water source area.
- GW-2 applies to groundwater within 30 feet of an occupied building or structure where the average annual depth to groundwater in the area is 15 feet or less, such that groundwater may be a potential source of vapor-phase oil and/or hazardous material to indoor air.
- GW-3 applies to all groundwater within the Commonwealth of Massachusetts, as it is considered a potential source of discharge to surface water.

Based on the MassDEP Bureau of Waste Site Cleanup Site Assessment Map for the Disposal Site, provided as *Appendix A*, the Disposal Site is not located within an aquifer designated as a current or potential drinking water source, nor within 500 feet of a public water supply. However, groundwater in and around the Disposal Site is located within 500 feet of one or more private drinking water wells, and therefore GW-1 applies.

Groundwater is not located within 30 feet of an occupied structure and groundwater at the site is not categorized as GW-2; however, upon completion of the slated library, groundwater may be located within 30 feet of an occupied structure, the average annual depth to groundwater in the vicinity of the library may be 15 feet or less and therefore portions of groundwater at the Site may become categorized as GW-2.

As noted above, GW-3 applies to all groundwater as a potential source of discharge to surface water. The nearest surface water body to the site, Town Farm Brook, is located approximately 750 feet northeast of the Disposal Site. Additionally, there are numerous delineated wetlands throughout the Site.

1.6 Disposal Site Map (310 CMR 40.0483(b))

The Disposal Site is depicted on *Figure 2*. A Bureau of Waste Site Cleanup Site Assessment Map depicting the site and its surroundings is included in *Appendix A*.

1.7 Potential Receptors

The Town of Shutesbury occupies an area of approximately 27.1 square miles, and the 2020 U.S. Census listed the population of the city as approximately 1,717 residents. Therefore, the population density in the Town is approximately 63 residents per square mile. There are no known institutions as defined by 310 CMR 40.0006 (a publicly or privately owned hospital, health care facility, orphanage, nursing home,

convalescent home, educational facility, or correctional facility, where such facility in whole or in part provides overnight housing) within 500 feet of the Disposal Site.

At the time of writing this report the Disposal Site is vacant wooded land. Potential receptors are adults and children who use the land for recreational or foot travel purposes. The area surrounding the property consists of vacant wooded land and residential properties. Future receptors are anticipated to include adult workers and adult and child-aged visitors of the planned library. The current conceptual development plan for the library includes construction of the building at the northern end of the parcel, approximately 250 to 500 feet from Leverett Road.

The nearest mapped surface water body, a branch of the Town Farm Brook, is located approximately 1,250 feet to the south of the subject site. Groundwater elevation measurements collected during December 2, 2022 and January 11, 2023 groundwater monitoring events, as described in the following sections, indicate that local groundwater flow is directed to the southwest. There are wetlands located across the property, with the nearest being approximately 600 feet to the north.

2 Disposal Site Background (310 CMR 40.0483(c))

The Disposal Site is located within a vacant, predominantly wooded, parcel located in the Town Center Zone (TC) of Shutesbury, Massachusetts.

2.1 Site History

The property has been owned by the Town of Shutesbury since 2004. The most recent residential structure on the site was constructed in 1918 according to the property record card, accessible via the Shutesbury assessor's database, and was demolished in May of 2005. The associated outbuilding, a three-bay garage, was constructed between 1962 and 1972 based on aerial photos provided by EDR for those years and was demolished in August of 2021. Construction of the VOR facility began prior to 1960, was completed by 1962, and was deconstructed by 1972 according to aerial photos provided by EDR for those years. An underground storage tank (UST) used to store gasoline and associated with the VOR facility was removed on September 14, 1994. The following operational history was compiled in part from references obtained from Environmental Data Resources (EDR). The following sources were obtained:

- A summary of city street directories provided by EDR for the years 1992, 1995, 2000, 2005, 2010, 2014, and 2017.
- Aerial photographs provided by EDR for the years 1938, 1951, 1960, 1962, 1972, 1975, 1981, 1987, 1992, 1997, 2006, 2010, 2014, and 2018.
- Topographic maps provided by EDR for the years 1890, 1893, 1908, 1942, 1943, 1950, 1964, 1975, 1979, 1990, 2012, 2015, and 2018.
- Sanborn Fire Insurance Maps provided by EDR were not available for the property.

Copies of the reference documents are included in *Appendix B*.

2.1.1 Operations History (310 CMR 40.0483(1)(c)(1))

An 1890 topographic map provided by EDR, the earliest record provided for the property, indicates that the north end of the property bordering Leverett road had been developed with one or more structures at that time. The most recent residential structure on the property was recorded to have been constructed in 1918 and demolished in May of 2005 according to the property card form the Assessor's database. An associated outbuilding, a three-bay garage, was constructed between 1962 and 1972 based on aerial photos provided by EDR for those years and was demolished in August of 2021.

The 1938 and 1951 aerial photos provided by EDR indicate that the southern approximately two-thirds of the property was undeveloped wooded land at that time. According to the EDR report and a USACOE Memorandum dated January 21, 2022 (USACOE, 2022), the southern portion of the property was leased from 1957 to 1967 for use as an Air Force VOR facility. The 1972 aerial photo appears to show the VOR facility had been deconstructed and that some regrowth of previously cleared vegetation had occurred.

2.1.2 Release History (310 CMR 40.0483(1)(c)(2))

A Limited Subsurface Assessment was performed in September 2021 by O'Reilly Talbot & Okun Associates (OTO) of Springfield, Massachusetts. During the September 2021 Assessment, OTO advanced ten soil borings (B1-B10) at the Site. Analysis of one soil sample from soil boring B-9 collected from 8 to 10 feet below grade surface (ft bgs), located in the approximate area of a historical gasoline UST associated with the historical VOR facility, equaled the applicable reportable concentration (the RCS-1) for C5-C8 aliphatic hydrocarbons of 100 parts per million (ppm). No other soil borings or groundwater monitoring wells were installed in the vicinity of the Disposal Site during the September 2021 Assessment. The exceedance of C5-C8 aliphatic hydrocarbons in soil boring B-9 triggered a 120-day release condition. This release condition was reported to the MassDEP by the Town of Shutesbury on January 28, 2022.

In a Notice of Responsibility (NOR) issued by the MassDEP to the Town of Shutesbury on February 1, 2022, the release condition at the Site was assigned RTN 1-21489. In the NOR, MassDEP acknowledged that historic operations by the United States Department of Defense (DOD) were considered to be the likely source of contamination at the Site. A copy of the NOR was provided to the USACOE.

2.1.3 Oil and Hazardous Material Use and Storage History (310 CMR 40.0483(1)(c)(3))

The property was formerly developed with an Air Force VOR facility from the late 1950's or early 1960's to the mid to late 1960's, with a 275-gallon UST containing gasoline having been installed on the property to supply an emergency power unit. According to the USACOE Memorandum (USACOE, 2022) at the direction of the Department of Defense Installation Restoration Program (IRP) Formerly

Used Defense Site Program, the 275-gallon gasoline UST was removed from the property on September 14, 1994 and on September 26, 1994 total of 11.5 tons of petroleum-impacted soils were removed from the property. The USACOE notes that following removal of the initial 11.5 tons of petroleum-impacted soils that two (2) confirmatory samples were collected and submitted for laboratory analysis for Total Petroleum Hydrocarbons (TPH). TPH was detected in one of the confirmatory samples at 145 milligrams per kilogram (mg/kg). The USACOE notes that an additional 89.78 tons of petroleum-impacted soils were removed at a later date, and following that, an additional confirmatory sample was collected on January 5, 1995 that had a laboratory detection of 94.9 mg/kg TPH. The USACOE Memorandum does not detail further response actions completed at the direction of the IRP at the property.

It is likely that remaining impacts from the historical gasoline UST associated with the VOR facility are the source of the release condition associated with RTN 1-21489.

2.1.4 Waste Management, Environmental Permits, and Regulatory History (310 CMR 40.0483(1)(c)(4)&(5))

Waste management practices associated with the former VOR station were not identified. No relevant environmental permits were identified in connection with the historical property uses. Historical activities have involved demolition and removal of the VOR station, removal of a UST on September 14, 1994, and excavation and offsite disposal of roughly 100 tons of petroleum-impacted soils on September 26, 1994 overseen by the USACOE. Environmental due diligence completed by OTO in 2021 discovered a reportable concentration of VPH Ranges in soil which triggered a 120-day reporting condition and the assignment of RTN 1-21489 to the Disposal Site.

2.2 Site Hydrogeologic Characteristics (310 CMR 40.0483(d))

2.2.1 Geologic Setting and Resources (310 CMR 40.0483(d)(3-5))

2.2.1.1 Soil and Bedrock Types

The topography of the Site is varied, but generally slopes gradually to the south-southeast. The regional topography is also varied, but generally slopes to the east towards the Town Farm Brook (USGS, 2018).

Surficial material at the property is mapped primarily as the Metacomet fine sandy loam complex (USDA, 2022). This complex consists of loamy till underlain by sandy lodgment till derived from gneiss, and loamy over sandy supraglacial melt-out till derived from gneiss. However, during the November 2022 soil boring investigation, clays were observed in the subsurface, and surficial ponding has been observed across the property, which is not typically characteristic of a fine sandy loam.

Bedrock beneath the Site is mapped as the Dry Hill Gneiss, which is "pink microcline-biotite and microcline-hornblende gneiss containing pink microcline megacrysts and minor quartzite" and "biotite-tourmaline schist and quartzite" (Zen, 1983). Depth to bedrock at the property was not documented in the records reviewed as part of this investigation. However, depth to bedrock was encountered at 26 ft bgs, at an abutting property, 64 Leverett Road, according to well completion reports obtained from the MassDEP Well Drilling database for a well (Well ID 647548) drilled on August 21, 2014. Bedrock was not encountered to the maximum depth of 20 fbg during the November 2022 soil boring activities.

2.2.1.2 Surface Water and Drainage Features

The nearest surface water body, a branch of the Town Farm Brook, is located approximately 1250 feet to the south of the Disposal Site (USGS, 2018). Town Farm Brook leads to Atherton Brook, which discharges to the Quabbin Reservoir. The Quabbin Reservoir is listed in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) as a Class A waterway. According to 314 CMR 4.05, Class A waters are "designated as excellent habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation, even if not allowed. These waters shall have excellent aesthetic value. These waters are protected as Outstanding Resource Waters."

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 2501280020A, dated June 18, 1980, the Disposal Site and surrounding properties are not located in a mapped floodplain.

Refer to *Appendix A* for the MassDEP BWSC Site Assessment Map. No Areas of Critical Environmental Concern, vernal pools, species of special concern, threatened or endangered species, or fish habitats are mapped within 500 feet of the Disposal Site. According to a Wetland Delineation completed by Fuss & O'Neill in January 2023, there are mapped wetlands on, and immediately abutting, the property, with the closest being approximately 600 feet to the north of the subject site.

2.2.1.3 Groundwater Resources

The Disposal Site is not located in a Zone II aquifer, interim wellhead protection area, sole-source aquifer, or potentially productive aquifer. The property is not connected to public water and sewer. Refer to *Appendix A* for the MassDEP BWSC Site Assessment Map.

During groundwater monitoring activities in 2022 and 2023, the depth to groundwater on-site was observed at depths between 3 and 11.4 fbg. Local groundwater flow was observed to be directed towards the southwest.

2.3 Field Investigations and Findings

In accordance with 310 CMR 40.0483(d)(1) and 310 CMR 40.0483(e), this section describes the following field investigations relevant to the Disposal Site:

- September 2021 OTO limited soil assessment,
- November 2022 and December 2022 Limited Phase II Subsurface Investigation
- January 2023 well installation.

In accordance with 310 CMR 40.0483(1)(e)(2)(c), the following Tables 1 & 2 summarize the minimum and maximum concentration for each contaminant detected in OTO soil sample B-9 and in soil and groundwater samples collected during Fuss & O'Neill's 2022 Limited Phase II Subsurface Investigation.

Table 1
Soil Condition Summary – 2021 & 2022 Data Set

Chemical Compound	Minimum Concentration	Maximum Concentration	S-1/GW-1	S-1/GW-3
C5-C8 Aliphatic Hydrocarbons	9.0	100	100	100
C9-C12 Aliphatic Hydrocarbons	8.7	125	1,000	1,000
C9-C10 Aromatic Hydrocarbons	14.9	66	100	100
Benzene	*0.3	0.3	2	40
Ethylbenzene	0.18	0.9	40	500
Naphthalene	0.54	0.6	4	500
Total Xylenes	0.48	1.4	400	500
n-Butylbenzene	*1.2	1.2	0.7	1
sec-Butylbenzene	*0.28	0.28	10	20
Isopropylbenzene	*0.25	0.25	NS	NS
n-Propylbenzene	*1.6	1.6	NS	NS
1,2,4-Trimethylbenzene	*2.1	2.1	NS	NS
1,3,5-Trimethylbenzene	*3.2	3.2	NS	NS
C9-C18 Aliphatic Hydrocarbons	*15.2	15.2	1,000	1,000
C11-C22 Aromatic Hydrocarbons	8.95	9.11	1,000	1,000
2-Methylnaphthalene	*0.47	0.47	10	500
Lead	1.48	3.92	200	200

All units reported in milligrams/kilogram (mg/kg).
Data underlined exceeds one or more Method 1 S-1/GW-1 or S-1/GW-3 soil standards.
ND = Not Detected above laboratory reporting limits
* = Compound only detected in one sample
NS = Not Specified

Table 2
Groundwater Condition Summary – 2022 Data Set

Chemical Compound*	Minimum/ Maximum Concentration **	GW-1	GW-3
C5-C8 Aliphatic Hydrocarbons	10,900	300	50,000
C9-C12 Aliphatic Hydrocarbons	29,500	700	50,000
C9-C10 Aromatic Hydrocarbons	3,420	200	50,000
Ethylbenzene	985	700	5,000
Naphthalene	161	140	20,000
Toluene	933	1,000	40,000
Total Xylenes	2,770	10,000	5,000
C9-C18 Aliphatic Hydrocarbons	739	700	50,000
C11-C22 Aromatic Hydrocarbons	234	200	5,000
2-Methylnaphthalene	23	10	20,000
Nickel	6	100	200
Zinc	22	5,000	900
Thallium	10	2	3,000

All units reported in micrograms per liter µg/l.
Data underlined exceeds one or more Method 1 GW-1 or GW-3 soil standards.
** = Only one sample collected

2.3.1 OTO's Limited Soil Assessment (September 2021)

On September 16, 2021, a soil sample collected by OTO from soil boring B-9 exceeded the RCS-1 reportable concentration for C5-C8 aliphatic hydrocarbons of 100 milligrams per kilogram (mg/kg; equivalent to ppm). This condition was reported to the MassDEP and was assigned RTN 1-21489. The boring location B-9 is depicted on *Figure 2*.

2.3.2 Fuss & O'Neill Limited Phase II Subsurface Investigation (November and December 2022)

Between November 11 and December 2, 2022, Fuss & O'Neill conducted environmental investigations at the property, proximal to the previously-identified release condition, which included the following:

- Installation of eight (8) soil borings via Geoprobe® direct push methodology, and the characterization and collection of soil samples by a Fuss & O'Neill engineer.

- Installation of one (1) groundwater monitoring well and collection of a groundwater sample by a Fuss & O'Neill engineer.
- Laboratory analysis of soil and groundwater samples, consistent with MassDEP and/or EPA testing methodologies.

The objectives of the November and December 2022 Limited Phase II Subsurface Investigation were to evaluate the reproducibility of the reportable concentration of VPH identified in September 2021 by OTO, to further delineate the nature and extent of the release condition, and to confirm the absence or presence of related environmental conditions in the area. The installed groundwater monitoring well and the boring locations are depicted on *Figure 2*.

Soil Investigation & Conditions

On November 11, 2022, eight (8) soil borings were advanced via direct push methodology at locations proximal to the previously identified VPH soil condition. Fuss & O'Neill soil boring B-9R was installed directly adjacent to OTO soil boring B-9, and the remaining locations were adjusted in the field based on real-time field observations. This approach was taken to better define the area of petroleum-impacted soil and to delineate soil impacts in four lateral directions (north, south, east, and west) from B-9. Direct push borings were advanced to depths of up to 20 ft bgs. Soil encountered during the investigation generally consisted of brown to gray sand and clay with trace gravel, shifting to primarily gray clays by the final boring depths. Recovered soil was screened for total volatile organics (TOV) content in the field with a photoionization device (PID) calibrated to a 100 parts per million isobutylene standard. Field observations were made regarding the evidence, or lack of, environmental impacts, groundwater, and the presence of anthropogenic materials (i.e. coal, ash, brick, concrete, etc.) commonly found in urban fill. Boring logs are included in *Appendix C*.

TOV content for screened soil ranged from 0.0 parts per million by volume (ppmv) (not detected above instrument reporting limits) to 510.5 ppmv at depth of 7 to 8 ft bgs in soil boring B-13. It should be noted that TOV readings up to 0.5 ppmv can be caused by a moisture response in the instrument and are not always indicative of the presence of volatile organic compounds. Olfactory evidence of petroleum-impacted soil was observed at multiple locations during the subsurface investigation, generally ranging between 7 and 15 ft bgs in depth and corresponding to observations of elevated TOVs. Limited visual observations indicative of urban fill were seen during the subsurface investigation, including what appeared to be ash in boring B-16 at a depth of 9.5 to 11 ft bgs. Groundwater was observed at depths ranging from 9 and 14 ft bgs during the soil boring investigation.

The sample locations and soil sample identifications are summarized in *Table 3* below.

Table 3
Summary of Soil Samples – November 11, 2022

Location	Sample Depth (ft bgs)	Soil Sample Number	Analysis
B-9R	10-12	1111-01	Lead, VPHs w/ Target VOCs, and EPH w/ Target PAHs
B-13	9-11	1111-02	
B-14	10.5-12.5	1111-05	
B-15	7-9	1111-06	
B-16	11-13	1111-07	
B-17	11-13	1111-08	
B-11	10 - 12	1111-03	Collected and placed on laboratory hold pending initial results
B-12	10.5 - 12.5	11111-04	

Notes: Only the last six digits of the sample identification number are listed.
ft bgs: feet below grade surface

The soil samples were submitted to New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for laboratory analysis. Soil samples were analyzed for the following parameters:

- Extractable Petroleum Hydrocarbons (EPH) with Target Polycyclic Aromatic Hydrocarbons (PAH) according to MassDEP Methodology
- VPH with Target Volatile Organic Compounds (VOCs) according to MassDEP Methodology
- Lead according to the USEPA Method 6010D

Soil analytical results were compared to the Method 1 risk-based Standards established by the MCP(310 CMR 40.0000). The applicable Method 1 Standards for the Site, per 310 CMR 40.0933 and 310 CMR 40.0975, are S-1/GW-1 and S-1/GW-3, given that soil impacts are within potentially accessible soil (3 to 15 ft bgs, unpaved) and the potential for high frequency presence of children following future development of the Site.

Concentrations of select EPH Ranges and Target PAHs exceeded the laboratory reporting limits in samples from B-13 and B-16; however, no concentrations exceeded the applicable Method 1 Standards.

Concentrations of select VPH Ranges and Target VOCs exceeded the laboratory reporting limits in samples from B-9R, B-13, B-14, B-15, B-16, and B-17; however, no concentrations exceeded the applicable Method 1 Standards.

Concentrations of Lead exceeded the laboratory reporting limits in the eight samples that were analyzed; however, no concentrations exceeded the applicable Method 1 Standards.

Refer to *Table 4* for a summary of the analytical results compared to the applicable criteria. The laboratory analytical reports are included as *Attachment C*.

Groundwater Investigation & Conditions

On November 11, 2022, Fuss & O'Neill also oversaw the installation of a two-inch diameter polyvinyl chloride (PVC) monitoring well, designated MW-09. The well was installed adjacent to soil boring B-13, which exhibited the highest TOV readings during the soil boring investigation. The monitoring well was screened from approximately 10 to 20 ft bgs based on the observed groundwater depth of approximately 12 to 13 ft bgs. The elevation of the top of casing of the monitoring well was surveyed by a licensed professional surveyor to be 1187.95 feet above mean sea level. Fuss & O'Neill returned to the Site on November 29, 2022, to develop monitoring well MW-09 using industry standard methodology. The purge water exhibited a slight petroleum odor but did not exhibit visible sheen or non-aqueous phase liquids (NAPL).

Fuss & O'Neill returned to the Site on December 2, 2022, to collect a groundwater sample from monitoring well MW-09. The monitoring well was purged prior to sample collection using industry standard low-flow procedures. The groundwater sampling log is provided in *Attachment B*.

The groundwater sample was submitted to NETLAB for laboratory analysis of the following parameters:

- EPH with Target PAHs according to the MassDEP Method
- VPH with Target VOCs according to the MassDEP Method
- MassDEP CAM 14 Metals according to the USEPA Methods 6020B (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, and/or Zinc).

A summary of the groundwater sample submitted for laboratory analysis is included below in *Table 5*.

Table 5
Summary of Groundwater Sample – December 2, 2022

Location	Sample Number	Analysis
MW-09	1202-01	CAM 14 Metals, EPH w/ target PAHs, and VPH w/ Target VOCs

Notes: Only the last six digits of the sample identification number are listed.

Groundwater analytical results were compared to the MassDEP GW-1 and GW-3 standards. Concentrations of select VPH Ranges and Target VOCs were detected above laboratory reporting limits in the sample collected from monitoring well MW-9. Concentrations of C5-C8 Aliphatic Hydrocarbons, C9-C12 Aliphatic Hydrocarbons, C9-C10 Aromatic Hydrocarbons, Ethylbenzene, and Naphthalene exceeded applicable GW-1 Method 1 Standards. Toluene, m&p Xylene, and o-Xylene were detected above laboratory reporting limits but reported concentrations for these compounds did not exceed applicable GW-1 Method 1 Standards.

Concentrations of select EPH Ranges and Target PAHs were detected above the laboratory reporting limits in the sample collected from monitoring well MW-09. 2-Methylnaphthelene, C9-C18 Aliphatic

Hydrocarbons, and C11-C22 Aromatic Hydrocarbons were detected above applicable GW-1 Method 1 Standards. Naphthalene was detected above laboratory reporting limits but reported concentrations did not exceed applicable Method 1 Standards.

Concentrations of select CAM 14 Metals were detected above laboratory reporting limits in the sample collected from monitoring well MW-09. Thallium was detected above the applicable GW-1 Method 1 Standard. Nickel and Zinc were detected above laboratory reporting limits but reported concentrations did not exceed applicable Method 1 Standards.

Additional groundwater testing and characterization was performed, as described below in *Section 2.3.3* to better characterize the nature and extent of constituents in groundwater.

A summary of the December 2022 groundwater analytical data is presented in *Table 6*. Copies of laboratory analytical reports are provided in *Appendix D*.

2.3.3 Additional Well Installation & Groundwater Monitoring (January 2023)

Following review of the initial groundwater data from monitoring well MW-9, it was determined that additional groundwater monitoring wells were necessary to better characterize the nature and extent of the groundwater condition, as well as to better assess the groundwater flow direction and hydraulic gradient at the Site. On January 4, 2023, Fuss & O'Neill returned to the Site to oversee the installation of four (4) additional monitoring wells, designated MW-10, MW-12, MW-13, and MW-14. Monitoring wells were completed with ten feet of screen. Monitoring well development was completed on January 10, 2023, to improve the hydraulic interaction with the surrounding aquifer. A relative survey, based off the surveyed elevation of monitoring well MW-09, was completed for the top of casing elevation of monitoring wells MW-10, MW-12, MW-13, and MW-13. Monitoring well construction and top of casing elevation are summarized in *Table 7* below.

Table 7
Summary of Monitoring Well Installation – January 4, 2023

Location	Ground Surface Elevation (FT AMSL)	Approx. Well Screen Interval (fbg)
MW-10	1188.11	4.0-14.0
MW-12	1187.97	5.0-15.0
MW-13	1188.14	4.0-14.0
MW-14	1188.14	7.0-17.0

FT AMSL: feet above mean sea level

Fuss & O'Neill returned to the Site on January 11, 2023 to complete sampling of monitoring wells MW-09, MW-10, MW-12, MW-13, and MW-14. As part of the groundwater monitoring activity in January 2023, the depth to water was recorded at the monitoring well location. Depth to water was observed

between approximately 3 and 7.6 feet bgs. Groundwater elevation data for the January 11, 2023, sampling event is presented in *Table 8*. Groundwater contours depicting the measured groundwater gradient at the Site are depicted on *Figure 3*. Local groundwater flow in the vicinity of the Disposal Site is to the southwest, based on the January 2023 measurements.

The monitoring wells were purged prior to sample collection using industry standard low-flow procedures. The groundwater sampling logs are provided in *Attachment C*.

The groundwater sample was submitted to NETLAB for laboratory analysis of the following parameters:

- EPH with Target PAHs according to the MassDEP Method
- VPH with Target VOCs according to the MassDEP Method
- MassDEP CAM 14 Metals according to the USEPA Methods 6020B (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, and/or Zinc).

A summary of the groundwater samples submitted for laboratory analysis is included below in *Table 9*.

Table 9
Summary of Groundwater Samples – January 11, 2023

Location	Sample Number	Analysis
MW-09	0111-01	CAM 14 Metals, EPH w/ target PAHs, and VPH w/ Target VOCs
MW-10	0111-02	
MW-12	0111-03	
MW-13	0111-04	
MW-14	0111-05	

Notes: Only the last six digits of the sample identification number are listed.

Analysis of analytical data for the groundwater samples collected in January 2023 is pending and results will be submitted within the next regulatory submittal.

3 Preliminary Conceptual Site Model

A preliminary conceptual site model (CSM) has been developed for the Site based on the data collected to date regarding the nature of the release, hydrogeologic conditions, environmental setting, and current and foreseeable site uses. The data documented above was used to develop the preliminary CSM, which was used to support initial findings regarding the extent of contamination, media affected by the release, and areas warranting further testing and evaluation. A discussion of the source, site hydrogeology, migration pathways, and the nature and extent of contamination follows.

The CSM is an interpretation of the information available regarding a Disposal Site. Therefore, future findings may lead to future refinements of the CSM.

3.1 Nature and Extent of Contamination (310 CMR 40.0483(e))

The primary constituents of concern (COC) for the Site are petroleum-related compounds, specifically EPH Ranges and Target PAHs and VPH Ranges and Target VOCs. The source of these materials is correlated with the location of the historic gasoline UST, associated with the former Air Force VOR station on the south portion of the property. During soil exploratory activities in November 2022, olfactory evidence (petroleum odors) and high TOVs were identified in multiple soil borings at depths of about 7 to 14 feet and generally correlated to layers of the soil column in the vadose zone bordering moist or wet soils. Trace evidence of fill material was identified in soil boring B-16 at a depth of approximately 9.5 feet.

Soil screening and analytical data from the source area (observed to be between Fuss & O'Neill soil borings B-9R and B-13) appear to show that petroleum-impacted soil generally exists at depths ranging from 7 to 14 ft bgs. Additionally, soil data in the four lateral directions from the source area, appear to show that petroleum impacts in soil are localized and do not extend more than ~25 ft from the area around soil borings B-9R and B-13. It is likely that the former UST, removed in September 1994, was the primary source of the observed constituents within the soil and groundwater. Approximately 100-tons of hydrocarbon-impacted soil was removed from the property in the area of the former UST in 1994, though analytical testing since that time indicates the continued presence of constituents in soil and groundwater above background levels and, with respect to groundwater, above applicable Method 1 risk-based standards.

During OTO's assessment in September 2021, one soil sample collected at a depth of 8 to 10 fbg from soil boring B-9 contained C5-C8 aliphatic hydrocarbons detected at the RCS-1 reportable concentration of 100 milligrams per kilogram (mg/Kg). This condition was reported, and on January 31, 2022, MassDEP assigned RTN 1-21489 to the Disposal Site on the property.

Additional soil samples collected from borings conducted by Fuss and O'Neill in November 2022 indicated the presence of hydrocarbon ranges in soil. The results were below the S-1/GW-1 and S-1/GW-3 MassDEP Method 1 soil standards, but above background levels.

The groundwater monitoring conducted by Fuss and O'Neill in December 2022 identified EPH Ranges and Target PAHs, Thallium, and VPH Ranges and Target VOCs at concentrations above applicable GW-1 MassDEP Method 1 groundwater standards, but below the applicable GW-3 standards. Ongoing additional groundwater monitoring in the vicinity of monitoring well MW-09 is required to better characterize the nature and extent of the groundwater condition, as well as to better assess the groundwater flow direction and hydraulic gradient at the Site. This subsequent investigation will also allow for a more comprehensive assessment of the Thallium in groundwater condition, to determine if it is being caused by a natural or anthropogenic source. Results from subsequent groundwater investigation activities will be contained within future regulatory submittals.

3.2 Migration Pathways and Exposure Potential (310 CMR 40.0483(f))

3.2.1 Soil

The primary constituents of concern in soil are EPH Ranges and Target PAHs and VPH Ranges and Target VOCs. Risks associated with petroleum-impacted soil are direct soil contact and inhalation or ingestion of dust. Therefore, the primary risk mechanism is associated with human health risks from direct soil contact. The property is not currently occupied, although it is municipally-owned and used for passive recreational purposes, and is slated to host a library on the northern portion of the property in the near future. The property use is not restricted by institutional controls (e.g. Activity and Use Limitation). Although present soil exposure potential is limited based on the depth of the condition (greater than three feet below grade), the soil could be rendered accessible by future redevelopment activities and therefore, a Condition of No Significant Risk does not exist at this time.

3.2.2 Soil Vapor

As noted above, a total of five (5) VOCs were detected at levels exceeding the GW-2 standards at monitoring well MW-09 during the December 2022 groundwater monitoring event. However, there are no current, or proposed, occupied structures in or near the Disposal Site. Therefore, vapor migration has not been identified as a significant human health risk pathway at this Disposal Site.

3.2.3 Groundwater

During groundwater monitoring activities in December 2022 and January 2023, the depth to groundwater in and around the Disposal Site has been observed from 3.0 and 11.6 ft bgs.

Concentration of various constituents, including multiple EPH and VPH Ranges as well as, ethylbenzene, naphthalene, 2-methylnaphthalene, and thallium in groundwater (MW-09) were detected at levels exceeding GW-1 standards, but not exceeding GW-3 standards, during the December 2022 groundwater monitoring activities. Groundwater in and around the Disposal Site is located within 500' of one or more residential wells located along Pelham Hill Road however, based on soil characterization in the area, and levels of compounds detected in monitoring well MW-9, migration to nearby residential wells is not considered a likely migration pathway at this time. There are multiple wetlands and a mapped stream in proximity to the Disposal Site and they are therefore potential environmental receptors. However, to date, no compounds were detected in groundwater samples at levels which exceeded applicable GW-3 standards.

3.3 Evaluation for Immediate Response Actions (310 CMR 40.0483(g))

Per 310 CMR 40.0412, Immediate Response Actions (IRA) are required if there is a release of oil/hazardous material that requires a "Two Hour" or "72 Hour" notification, an Imminent Hazard has been identified, or where MassDEP has determined that an immediate or accelerated response action is required. No imminent hazard conditions have been identified in connection with the Disposal Site. As noted in previous sections, based on the current dataset, the risk associated with the Disposal Site is limited to direct soil contact. Currently however, the affected soil is not accessible (within 0 to 3 ft bgs). While there are impacts to groundwater at levels exceeding applicable GW-1 criteria within 500 feet of one or more private residential wells, the release associated with the Disposal Site appears to be localized and relatively small in extent. At this time, the current dataset does not suggest that the release is impacting private residential wells in the area. Additionally, there are no known institutions as defined by 310 CMR 40.0006 within 500 feet of the Disposal Site. Therefore, no triggers for immediate response actions have been identified in connection with the Disposal Site at this time.

4 Data Representativeness and Usability

Data Usability Summary

The soil sample (B-9 (8-10)) that triggered the 120-day reporting condition associated with RTN 1-21489 was collected by OTO at soil boring location B-9. A "MassDEP MCP Analytical Method Report Certification Form" appended to the January 2022 OTO report indicated multiple points of non-compliance with Compendium of Analytical Methods (CAM) protocol with "no" responses provided for the questions, "were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s) and "were all QC performance standards specified in the CAM protocol(s) achieved". Additionally, a qualifier for OTO Sample B-9 (8-10) indicated that for analyses of VPH and Target VOCs, that "soil/methanol ratio does not meet method specifications. Excess amount of soil. Sample was completely covered with methanol, but less than the method-specified amount". This qualification may have impacted the overall quality of the VPH analysis and data for this sample. Additionally, a qualifier for OTO Sample B-9 (8-10) indicated that for VPH and Target VOCs, "surrogate recovery was outside of control limits due to suspected multiple matrix interference. Chromatogram(s) is attached". The laboratory analytical report indicates that for sample B-9 (8-10), the surrogate recovery exceeded the method acceptance limits. High surrogate recovery may have caused the VPH for sample B-9 (8-10) to be biased high. To be conservative, for the purposes of this Phase I ISI and Tier Classification, Fuss & O'Neill is using the reported values from the OTO report in support of the CSM, despite potential high bias.

Samples collected during the 2022 Fuss & O'Neill Limited Phase II Subsurface Investigation were collected using SW-846 and industry-standard protocols. Samples were analyzed using CAM-approved methods to evaluate for the contaminants of concern. CAM-compliant data was obtained for all analytical data collected during the 2022 Fuss & O'Neill environmental investigations. The Case Narratives for both the soil and groundwater analytical reports from the 2022 Fuss & O'Neill Phase II Limited Subsurface Investigation indicate that "the samples associated with this work order were

received in appropriately cooled and preserved containers", that "the chain of custody was adequately completed and corresponded to the samples submitted", that "all samples were prepared and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures", and that "the results for the associated calibration, method blank and laboratory control sample (LCS) were within specified quality control requirements and allowances." Therefore, for the purpose of the Phase I ISI, the analytical data set prepared to date is valid and usable for the preliminary characterization of release conditions. Copies of laboratory analytical reports and CAM certification forms, as applicable, are provided in *Appendix D*.

Data Representativeness Summary

OTO's September 2021 investigation targeted the area of the subject property documented to have been operated as the Air Force VOR and where a gasoline UST and petroleum-impacted soil were removed circa 1994. A soil sample for laboratory analysis was collected from a boring advanced in this area, at depths where evidence of petroleum impacted soil was observed.

Fuss & O'Neill returned to this area of the property during its 2022-2023 investigation activities. A soil boring was advanced at the approximate location of OTO's soil boring B-9, where the reportable release conditions were identified. Additional borings were advanced in lateral directions surrounding B-9 to evaluate the extent of the impact in both soil and groundwater, and whether or not contaminant levels increased moving away from the initial release area. Fuss & O'Neill collected soil samples for lab analysis from locations and depth intervals exhibiting relatively high levels of impact, considering PID screening results and olfactory evidence. Where no evidence of release was observed, soil samples were collected just above the water table, given that the release in question is a light NAPL and contaminants would be expected to concentrate at the soil-groundwater interface. Lastly, monitoring well MW-9 was installed at the location of highest observed impact.

In summary, the analytical data presented herein correspond to samples collected from locations exhibiting relatively high magnitude evidence of petroleum impacts. And, in an effort to characterize the extent of the release, soil samples surrounding the identified release area were collected for laboratory analysis. Therefore, the dataset associated with this Phase I ISI is considered appropriately representative of the release conditions.

5 Conclusions

Fuss & O'Neill performed environmental site assessment activities at the property located at 66 Leverett Road in Shutesbury, Massachusetts. Fuss & O'Neill has developed the following conclusions with regard to the Disposal Site:

- RTN 1-21489 was assigned on January 31, 2022 due to the presence of VPHs in on-site soil. This condition was identified in September 2021 during the limited soil assessment conducted by OTO.
- The release source for RTN 1-21489 appears to be related to impacted soils and groundwater left in place following the removal of a gasoline UST from the disposal site in 1994 under the direction of the IRP.

- Due to a lack of occupied buildings in the area of the Disposal Site, VOCs and vapor intrusion conditions are not considered ongoing risk pathways at the Disposal Site.
- Soil data collected during the November 2022 Fuss & O'Neill soil investigation did not replicate the reportable concentration of a VPH Range in soil boring B-9 that was discovered during OTO's 2021 investigation and triggered the 120-day reportable condition. However, petroleum-related compounds were detected at levels exceeding background conditions at several soil borings in the vicinity of OTO soil boring B-9 which would indicate petroleum-related subsurface impacts in soil remain.
- Soil screening and analytical data from the source area (observed to be between Fuss & O'Neill soil borings B-9R and B-13) appear to show that petroleum-impacted soil generally exists at depths ranging from 7 to 14 ft bgs. Additionally, soil data in the four lateral directions from the source area, appear to show that petroleum impacts in soil are localized and do not extend more than ~25 ft from the area around soil borings B-9R and B-13.
- Multiple exceedances of applicable GW-1 Method 1 Standards in groundwater for select EPH Ranges and Target PAHs and VPH Ranges and Target VOCs indicate that petroleum-related groundwater impacts exist in the vicinity of the historical UST at levels exceeding risk-based MassDEP criteria. While Thallium also exceeded the applicable GW-1 Method 1 Standard, it is not generally a contaminant of concern related to a petroleum release. Thallium can naturally occur in groundwater at elevated levels due to the presence of higher thallium content in certain soil.
- No imminent hazards, conditions of substantial release migration, critical exposure pathways, or other triggers for an IRA have been identified at this time.

Because a condition of No Significant Risk has not been documented in soil or groundwater, a Permanent Solution has not been achieved at the Disposal Site at this time. Based on the conditions summarized above, a Tier I Classification is appropriate for the Disposal Site under current conditions.

Additional response actions will be performed to address the ongoing soil condition, prior to the submission of a Permanent Solution Statement. Generally, it is anticipated that Release Abatement Measure (RAM) involving the excavation and off-site disposal of petroleum-impacted soils will be performed at a later date to address soil conditions which appear to be degrading groundwater quality. Additionally, it is anticipated that periodic groundwater monitoring in the vicinity of the Disposal Site will continue to assess groundwater conditions. Future groundwater monitoring may include installation of additional monitoring wells to further assess the nature and extent of the release. A conceptual Phase II Scope of Work is included with this transmittal, provided as *Appendix E*.

As noted above, it is the opinion of the Town of Shutesbury, that this Disposal Site qualifies under the DOD definition of a FUDS, and therefore the DOD should be responsible for response actions related to this condition moving forward. Communication with the DOD regarding this matter is ongoing. The Town of Shutesbury will continue to ensure that regulatory compliance is maintained at the Disposal Site while this matter is ongoing.

A Tier I Classification is being concurrently filed with the MassDEP. Public notice, including letters to the Chief Municipal Officer and Chair of the Board of Health, and legal notices describing the

applicability of the Tier I Classification, have been attached as *Appendix F* and will be distributed and/or published as required per 310 CMR 40.1402.

6 References

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Tables

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Table 4
Summary of Soil Quality Data and Objectives
Shutesbury Library Ph II
Shutesbury, Massachusetts
Samples Collected November 11, 2022

	Sample Location	B-9R	B-13	B-14	B-15	B-16	B-17	MassDEP Method 1 Soil Standards	
	Sample Depth (ft bgs)	10 - 12	9 - 11	10.5 - 12.5	7 - 9	11 - 13	11 - 13	S-1/GW-1	S-1/GW-3
	Sample ID	1701221111-01	1701221111-02	1701221111-05	1701221111-06	1701221111-07	1701221111-08		
EPHs and Target PAHs (MassDEP methodology)									
Naphthalene	mg/kg	ND<0.37	0.6	ND<0.35	ND<0.36	ND<0.36	ND<0.36	4	500
2-Methylnaphthalene	mg/kg	ND<0.37	0.47	ND<0.35	ND<0.36	ND<0.36	ND<0.36	0.7	300
Phenanthrene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	10	500
Acenaphthene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	4	1,000
Acenaphthylene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1	10
Fluorene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1,000	1,000
Anthracene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1,000	1,000
Fluoranthene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1,000	1,000
Pyrene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1,000	1,000
Benzo(a)anthracene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	7	7
Chrysene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	70	70
Benzo(b)fluoranthene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	7	7
Benzo(k)fluoranthene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	70	70
Benzo(a)pyrene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	2	2
Indeno(1,2,3-cd)pyrene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	7	7
Dibenz(a,h)anthracene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	0.7	0.7
Benzo(g,h,i)perylene	mg/kg	ND<0.37	ND<0.36	ND<0.35	ND<0.36	ND<0.36	ND<0.36	1,000	1,000
C9-C18 Aliphatic Hydrocarbons	mg/kg	ND<15.0	15.2	ND<14.3	ND<14.5	ND<14.3	ND<14.4	1,000	1,000
C19-C36 Aliphatic Hydrocarbons	mg/kg	ND<15.0	ND<14.4	ND<14.3	ND<14.5	ND<14.3	ND<14.4	3,000	3,000
C11-C22 Aromatic Hydrocarbons	mg/kg	ND<7.55	8.95	ND<14.3	9.11	ND<7.19	ND<7.22	1,000	1,000
Total Metals (USEPA method 6010)									
Lead	mg/kg	3.92	2.10	2.83	1.49	1.58	1.48	200	200
VPHs and Target VOCs (MassDEP methodology)									
Benzene	mg/kg	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.2	ND<0.3	2	40
Ethylbenzene	mg/kg	ND<0.3	ND<0.3	0.9	ND<0.3	ND<0.2	ND<0.3	40	500
Methyl t-butyl ether (MTBE)	mg/kg	ND<0.06	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.05	0.1	100
Naphthalene	mg/kg	ND<0.6	ND<0.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4	500
Toluene	mg/kg	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.2	ND<0.3	30	500
m&p-Xylene	mg/kg	ND<0.6	ND<0.6	1.4	ND<0.5	ND<0.5	ND<0.5	400	500
o-Xylene	mg/kg	ND<0.6	ND<0.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	400	500
Total xylenes	mg/kg	ND<0.6	ND<0.6	1.4	ND<0.5	ND<0.5	ND<0.5	400	500
C5-C8 Aliphatic Hydrocarbons	mg/kg	9.0	22.5	76.1	ND<5.1	ND<4.9	ND<5.0	100	100
C9-C12 Aliphatic Hydrocarbons	mg/kg	75.2	73.4	125	ND<5.1	ND<4.9	8.7	1,000	1,000
C9-C10 Aromatic Hydrocarbons	mg/kg	14.9	21.4	33.9	ND<5.1	ND<4.9	ND<5.0	100	100

Created By: CO
Checked By: MK

NOTES:

MassDEP: Massachusetts Department of Environmental Protection
USEPA: United States Environmental Protection Agency
CAM: Compendium of Analytical Methods
mg/kg: milligrams per killogram
ND: Not Detected above reporting limit

EPHs: Extractable Petroleum Hydrocarbons
PAHs: Polycyclic Aliphatic Hydrocarbons
VPHs: Volatile Petroleum Hydrocarbons
VOCs: Volatile Organic Compounds
Results in shaded, bold, and italics meet or exceed one or more applicable Method 1 Cleanup Standards

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Table 6
Summary of Groundwater Quality Data and Objectives
Shutesbury Library Limited Ph II Subsurface Investigation
Shutesbury, Massachusetts
Sample Collected December 2, 2022

	Sample Location	MW-9	MassDEP Method 1 Groundwater Standards	
	Sample ID	1701221202-01	GW-1	GW-3
	Screened Interval	10 - 20 feet		
EPHs and Target PAH (MassDEP methodology)				
Naphthalene	ug/l	101	140	20,000
2-Methylnaphthalene	ug/l	***23***	10	20,000
Phenanthrene	ug/l	ND<1.0	40	10,000
Acenaphthene	ug/l	ND<5.0	20	10,000
Acenaphthylene	ug/l	ND<1.0	30	40
Fluorene	ug/l	ND<5.0	30	40
Anthracene	ug/l	ND<5.0	60	30
Fluoranthene	ug/l	ND<5.0	90	200
Pyrene	ug/l	ND<5.0	60	20
Benzo(a)anthracene	ug/l	ND<1.0	1	1,000
Chrysene	ug/l	ND<2.0	2	70
Benzo(b)fluoranthene	ug/l	ND<1.0	1	400
Benzo(k)fluoranthene	ug/l	ND<1.0	1	100
Benzo(a)pyrene	ug/l	ND<0.2	0.2	500
Indeno(1,2,3-cd)pyrene	ug/l	ND<0.5	0.5	100
Dibenz(a,h)anthracene	ug/l	ND<0.5	0.5	40
Benzo(g,h,i)perylene	ug/l	ND<5.0	50	20
C9-C18 Aliphatic Hydrocarbons	ug/l	***739***	700	50,000
C19-C36 Aliphatic Hydrocarbons	ug/l	ND<200	14,000	50,000
C11-C22 Aromatic Hydrocarbons	ug/l	***234***	200	5,000
CAM 14 Metals; Total Metals (USEPA methods 6010/7470)				
Antimony	mg/l	ND<0.005	0.006	8
Arsenic	mg/l	ND<0.01	0.01	0.9
Barium	mg/l	ND<0.005	2	50
Beryllium	mg/l	ND<0.005	0.004	0.2
Cadmium	mg/l	ND<0.005	0.005	0.004
Chromium	mg/l	ND<0.005	0.1	0.3
Lead	mg/l	ND<0.005	0.015	0.01
Nickel	mg/l	0.006	0.1	0.2
Selenium	mg/l	ND<0.01	0.05	0.1
Silver	mg/l	ND<0.005	0.1	0.007
Vanadium	mg/l	ND<0.005	0.03	4
Zinc	mg/l	0.022	5	0.9
Thallium	mg/l	***0.01***	0.002	3
Mercury	mg/l	ND<0.0005	0.002	0.02
VPHs and Target VOCs (MassDEP methodology)				
Benzene	ug/l	ND<5.0	5	10,000
Ethylbenzene	ug/l	***985***	700	5,000
Methyl t-butyl ether (MTBE)	ug/l	ND<10.0	70	50,000
Naphthalene	ug/l	***161***	140	20,000
Toluene	ug/l	933	1,000	40,000
m&p-Xylene	ug/l	2,000	10,000	5,000
o-Xylene	ug/l	770	10,000	5,000
Total xylenes	ug/l	2,770	10,000	5,000
C5-C8 Aliphatic Hydrocarbons	ug/l	***10,900***	300	50,000
C9-C12 Aliphatic Hydrocarbons	ug/l	***29,500***	700	50,000
C9-C10 Aromatic Hydrocarbons	ug/l	***3,420***	200	50,000

Created By: CO
Checked By: MK

NOTES:

MassDEP: Massachusetts Department of Environmental Protection
USEPA: United States Environmental Protection Agency
CAM: Compendium of Analytical Methods
mg/l: milligrams per liter
ug/l: micrograms per liter
ND: Not Detected above reporting limit

EPHs: Extractable Petroleum Hydrocarbons
PAHs: Polycyclic Aliphatic Hydrocarbons
VPHs: Volatile Petroleum Hydrocarbons
VOCs: Volatile Organic Compounds
Results in shaded, bold, and italics meet or exceed one or more applicable Method 1 Cleanup Standards

FUSS & O'NEILL

Table 8
Summary of Groundwater Elevations
December 2022 - January 2023

66 Leverett Road
Shutesbury, Massachusetts

Location ID	Date Measured	Depth to Water (feet below PVC)	Groundwater Elevation (feet)
MW-09	12/2/2022	13.98	1173.79
PVC Elev = 1187.77	1/11/2023	10.16	1177.61
MW-10	12/2/2022	NM	NM
PVC Elev = 1187.93	1/11/2023	6.55	1181.38
MW-12	12/2/2022	NM	NM
PVC Elev = 1187.84	1/11/2023	7.76	1180.08
MW-13	12/2/2022	NM	NM
PVC Elev = 1188.00	1/11/2023	7.95	1180.05
MW-14	12/2/2022	NM	NM
PVC Elev = 1187.97	1/11/2023	10.37	1177.60

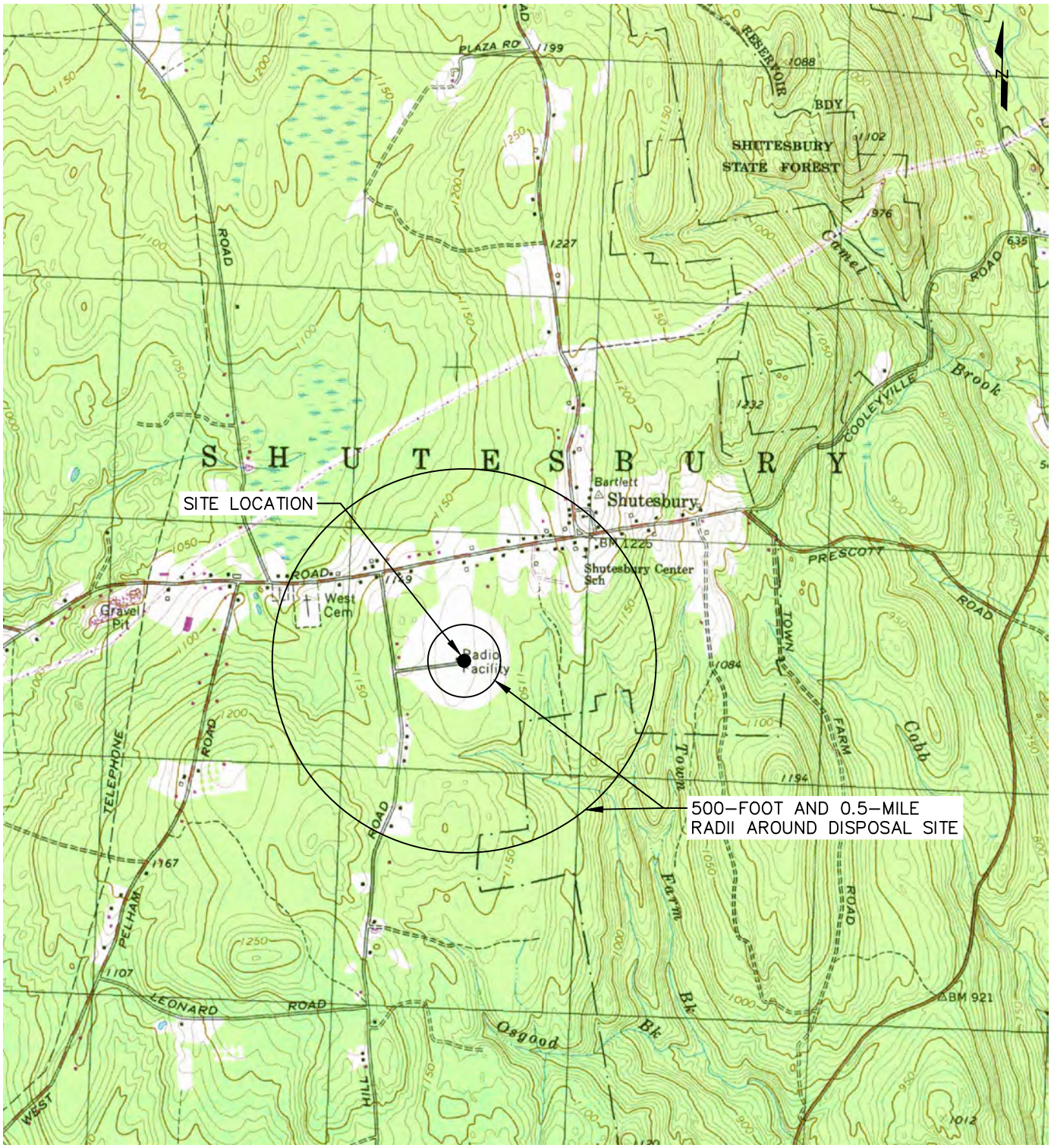
Created By: CJO
Reviewed By: MK

Notes:

PVC elevations were calculated based on surveyed elevations and measured casing and PVC heights

PVC: top of PVC well casing; ground elevation
NM: Not Measured: well not yet constructed

Figures



MAP REFERENCE:

THIS MAP WAS PREPARED FROM USGS TOPOGRAPHIC QUADRANGLE IMAGES

SOURCE: OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

SCALE:	
HORZ.:	1" = 2000'
VERT.:	
DATUM:	
HORZ.:	
VERT.:	

0 1000 2000
GRAPHIC SCALE

FUSS & O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

TOWN OF SHUTESBURY

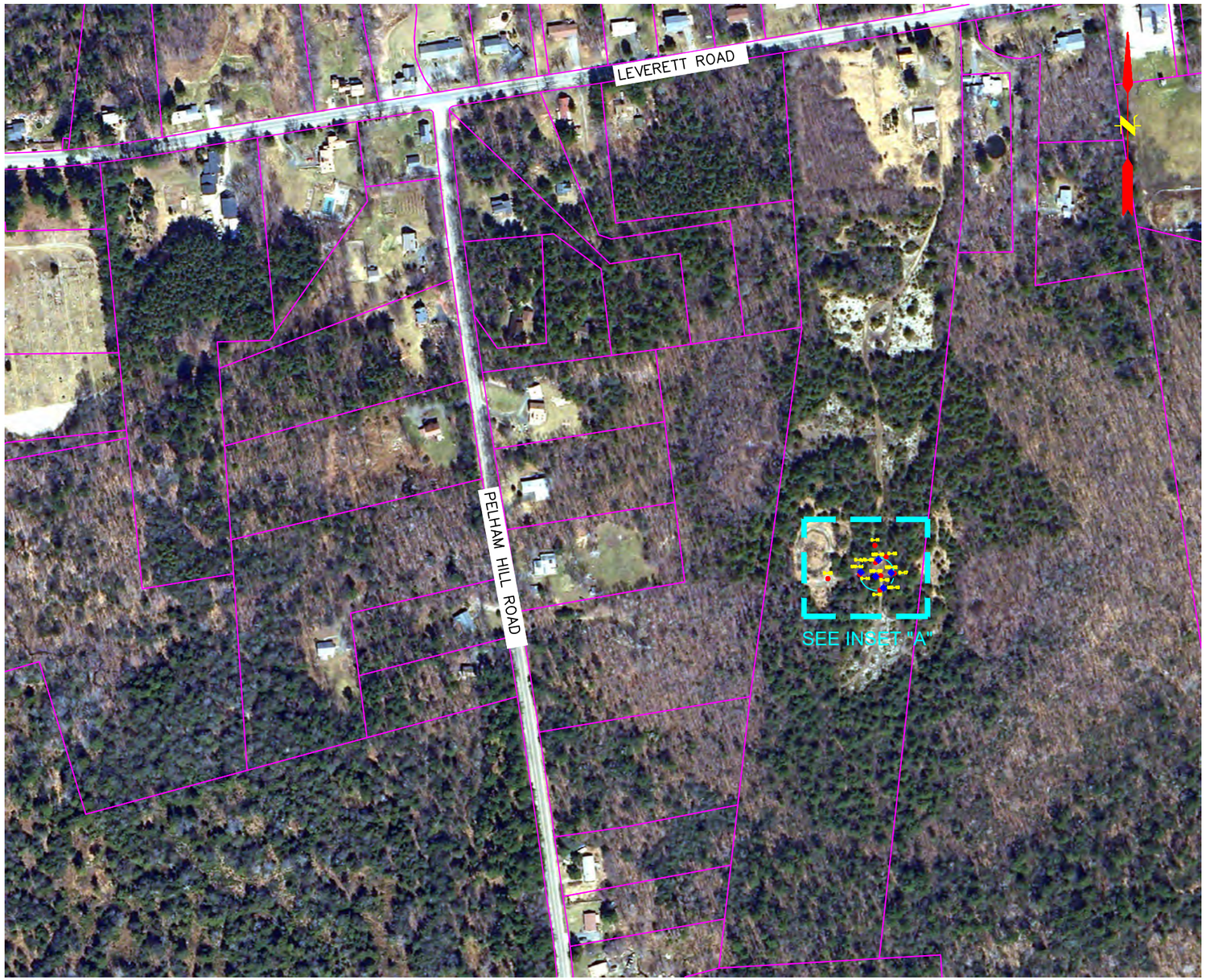
SITE LOCATION MAP

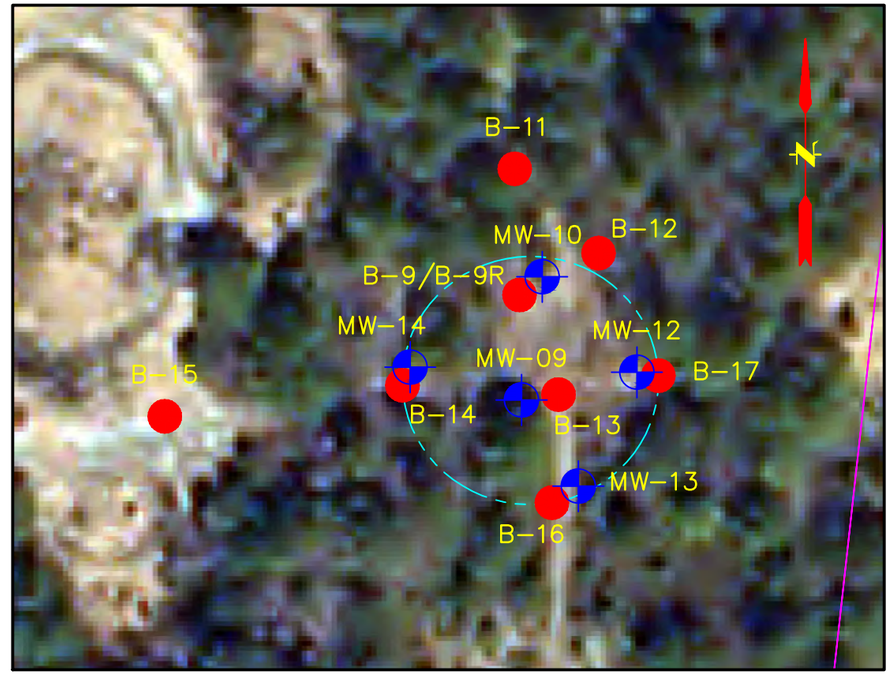
66 LEVERETT ROAD

SHUTESBURY MASSACHUSETTS

PROJ. No.: 20091032.A22
DATE: 01/26/2023

FIGURE 1





A INSET
SCALE: 1"= 50'

LEGEND

- SOIL BORING — B-XX
- MONITORING WELL — MW-XX
- PRELIMINARY DISPOSAL SITE BOUNDARY
- PROPERTY BOUNDARY

MAP REFERENCE:

THIS MAP WAS PREPARED FROM MASSGIS AERIAL IMAGERY (2005). THE SITE PLAN WAS PREPARED BY FUSS &O'NEILL (JANUARY 2023)

SOURCE: OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE:
HORZ.: 1" - 300'
VERT.:
DATUM:
HORZ.:
VERT.:
0 150 300
GRAPHIC SCALE

FUSS&O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

TOWN OF SHUTESBURY

SITE PLAN

66 LEVERETT ROAD

SHUTESBURY MASSACHUSETTS

PROJ. No.: 20091032.A22
DATE: 01/26/2023

FIGURE 2

GROUNDWATER ELEVATIONS (FT AMSL)	
MW–09	1177.60
MW–10	1181.38
MW–12	1180.08
MW–13	1180.05
MW–14	1177.61

NOTES: FT AMSL= FEET ABOVE MEAN SEA LEVEL
ELEVATIONS MEASURED ON 1/11/2023

MAP REFERENCE:

THIS MAP WAS PREPARED FROM MASSGIS AERIAL IMAGERY (2019). THE SITE PLAN WAS PREPARED BY FUSS &O'NEILL (JANUARY 2023)

SOURCE: OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

GROUNDWATER ELEVATION DATA IS PARTIALLY BASED ON A SURVEY PREPARED BY HAROLD L. EATON AND ASSOCIATES, INC. FOR THE TOWN OF SHUTESBURY, DATED JANUARY 4, 2023.

LEGEND

MONITORING WELL — MW–XX

PRELIMINARY DISPOSAL SITE BOUNDARY

GROUNDWATER ELEVATION CONTOURS — 1181

GROUNDWATER FLOW DIRECTION

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE:
HORZ.: 1" - 30'
VERT.:
DATUM:
HORZ.:
VERT.:
0 15 30
GRAPHIC SCALE

FUSS&O'NEILL
1550 MAIN STREET, SUITE 400
SPRINGFIELD, MA 01103
413.452.0445
www.fando.com

TOWN OF SHUTESBURY

GROUNDWATER ELEVATION CONTOUR MAP

66 LEVERETT ROAD

SHUTESBURY MASSACHUSETTS

PROJ. No.: 20091032.A22
DATE: 01/26/2023

FIGURE 3

File: J:\DWG\P2009\11032\A22\Environmental\Plan\Phase I ISI and Tier I Classification\20091032.A22_STP01-GWCONTOURS.dwg Layout: 11X17-L Plotted: 2023-01-27 3:26 PM Saved: 2023-01-27 3:25 PM User: Cotis
PC3: DWG TO PDF.PC3 STB/CTB: FO.STB
LAYER STATE:
MS VIEW:

Appendix A

MassDEP BWSC Site Assessment Map

MassDEP - Bureau of Waste Site Cleanup

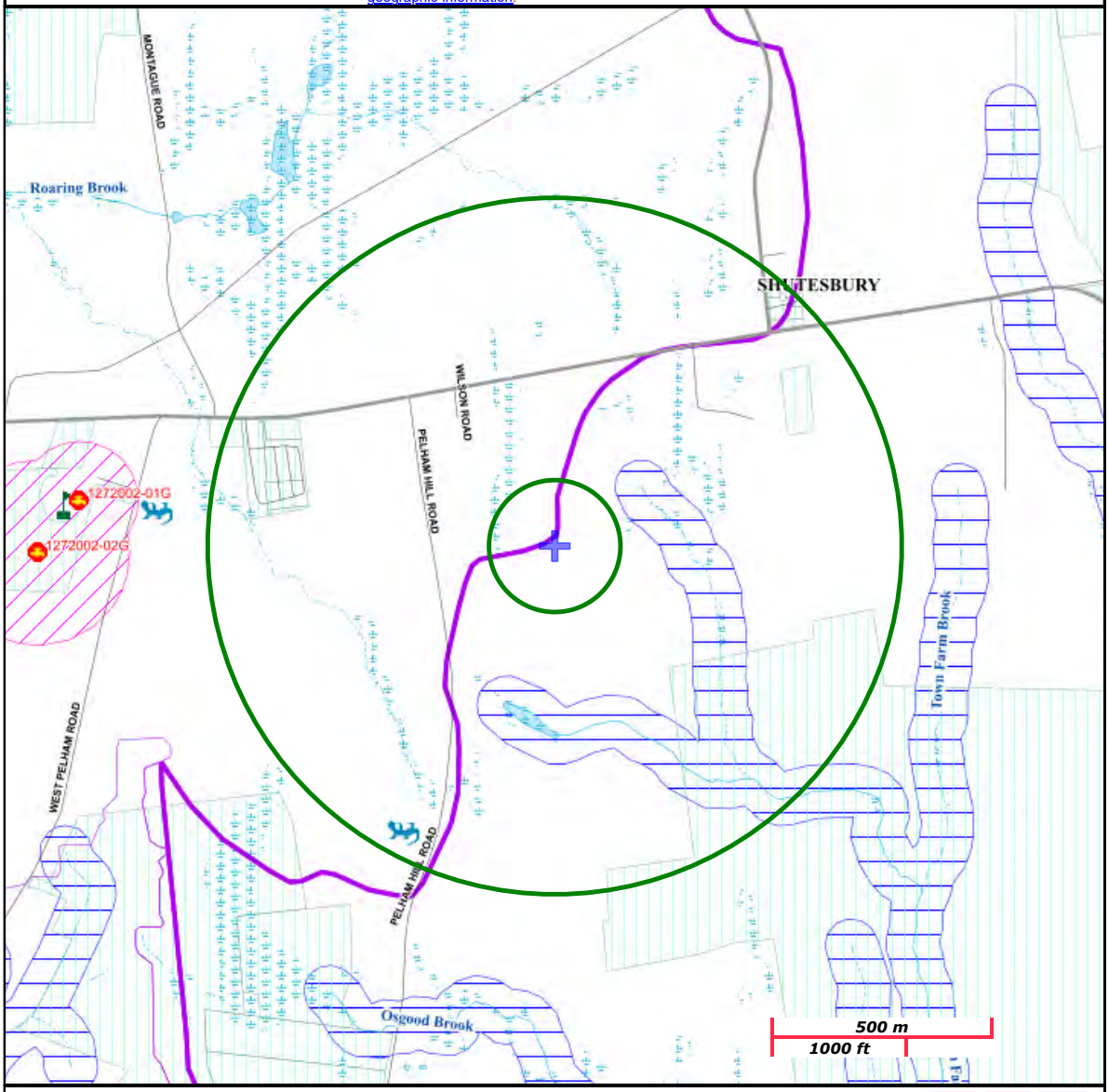
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
66 LEVERETT ROAD
66 LEVERETT ROAD SHUTESBURY, MA

NAD83 UTM Meters:
4702721mN , 712494mE (Zone: 18)
January 5, 2023

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major,PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

NHESP Pri-Hab of Rare Species; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Appendix B

Reference Documents for Site History

66 Leverett Road

66 Leverett Road

Shutesbury, MA 01072

Inquiry Number: 7221882.8

January 11, 2023

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/11/23

Site Name:

66 Leverett Road
66 Leverett Road
Shutesbury, MA 01072
EDR Inquiry # 7221882.8

Client Name:

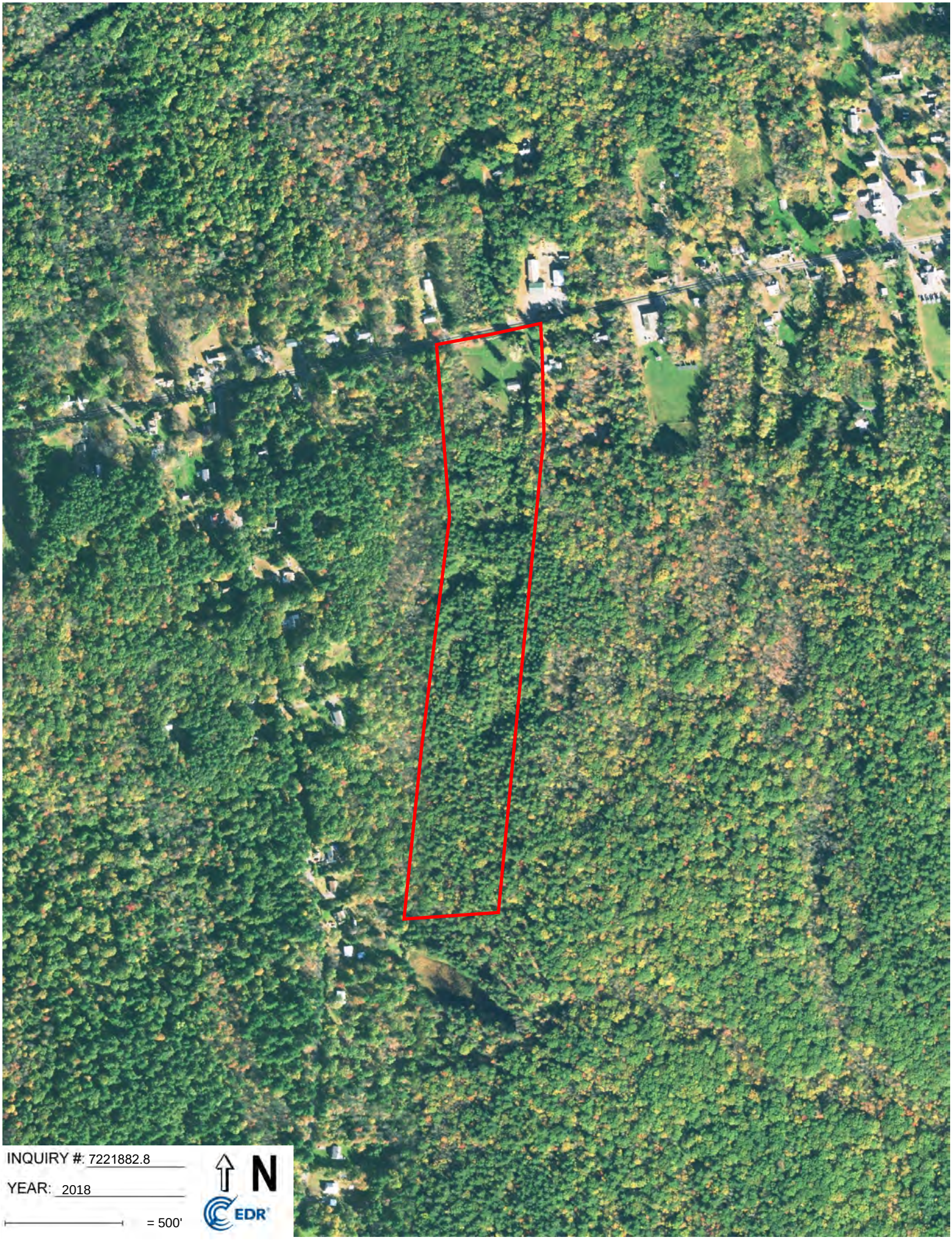
Fuss & O'Neill
317 Iron Horse Way
Providence, RI 02908
Contact: Clifford Otis

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2018	1"=500'	Flight Year: 2018	USDA/NAIP
2014	1"=500'	Flight Year: 2014	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1997	1"=500'	Flight Date: April 30, 1997	USGS
1992	1"=500'	Acquisition Date: April 28, 1992	USGS/DOQQ
1987	1"=500'	Flight Date: May 13, 1987	USGS
1981	1"=500'	Flight Date: April 07, 1981	USGS
1975	1"=500'	Flight Date: October 28, 1975	USGS
1972	1"=500'	Flight Date: April 26, 1972	USGS
1962	1"=500'	Flight Date: April 28, 1962	USGS
1960	1"=500'	Flight Date: May 01, 1960	USGS
1951	1"=500'	Flight Date: September 26, 1951	USDA
1938	1"=500'	Flight Date: November 16, 1938	USGS

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.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YEAR: 2018
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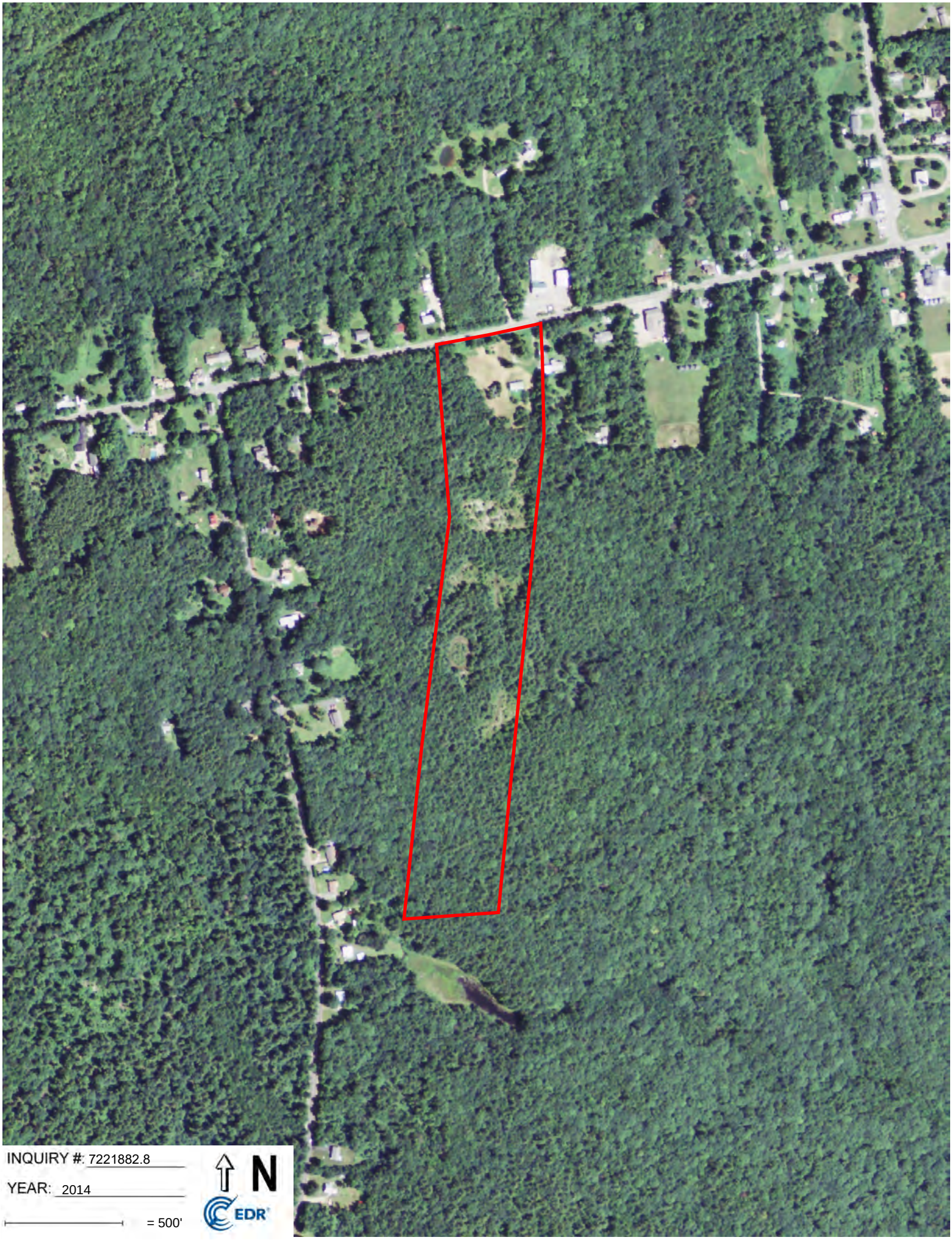
EDR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EDR


INQUIRY #: 7221882.8
YEAR: 2010
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EDR


INQUIRY #: 7221882.8
YEAR: 2006
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N
EDR

INQUIRY #: 7221882.8

YEAR: 1997

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.


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EDR

INQUIRY #: 7221882.8

YEAR: 1987

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 7221882.8

YEAR: 1981

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.


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YEAR: 1975
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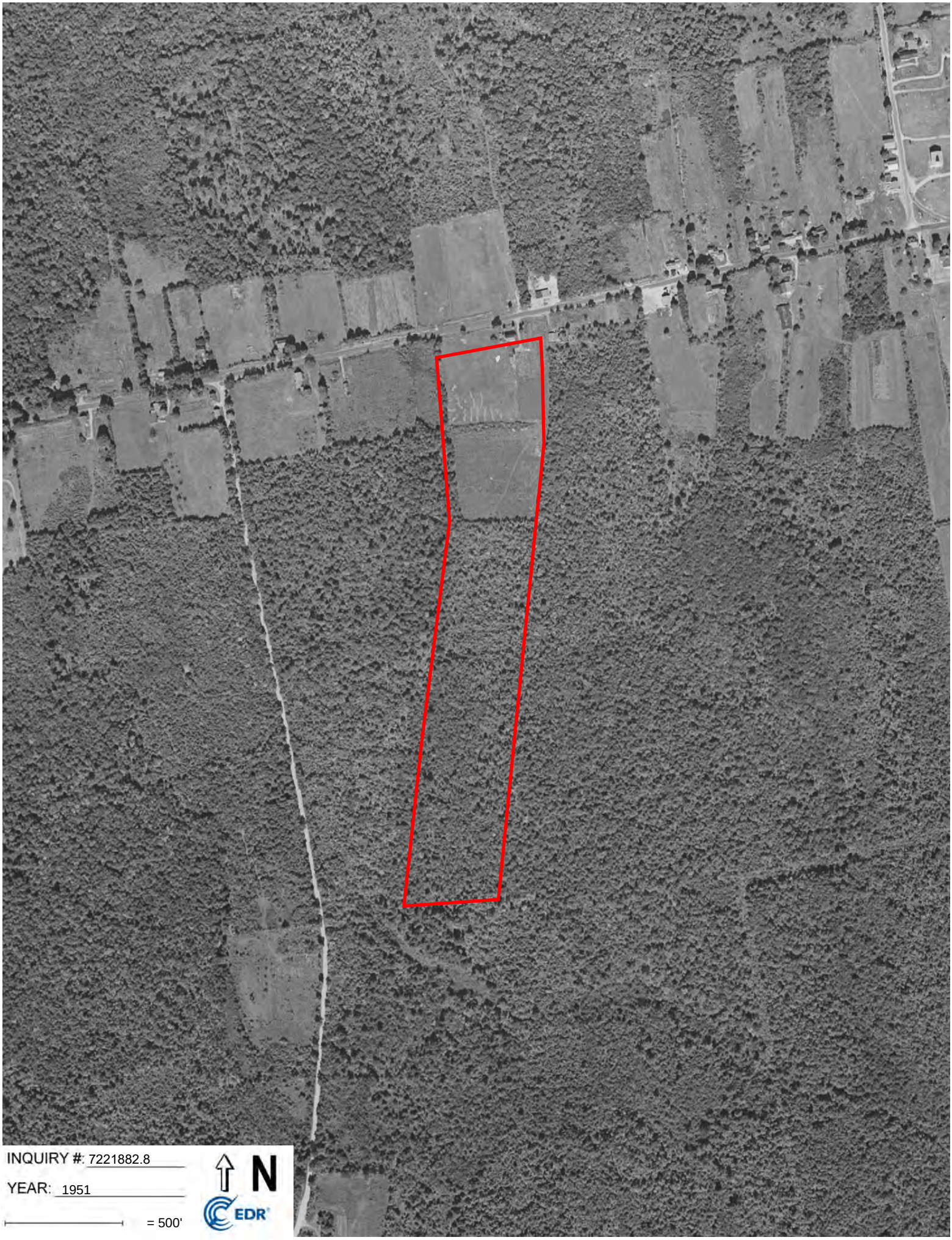
EDR


INQUIRY #: 7221882.8
YEAR: 1972
= 500'
N
EDR


INQUIRY #: 7221882.8
YEAR: 1962
= 500'
N
EDR


INQUIRY #: 7221882.8
YEAR: 1960
= 500'
N
EDR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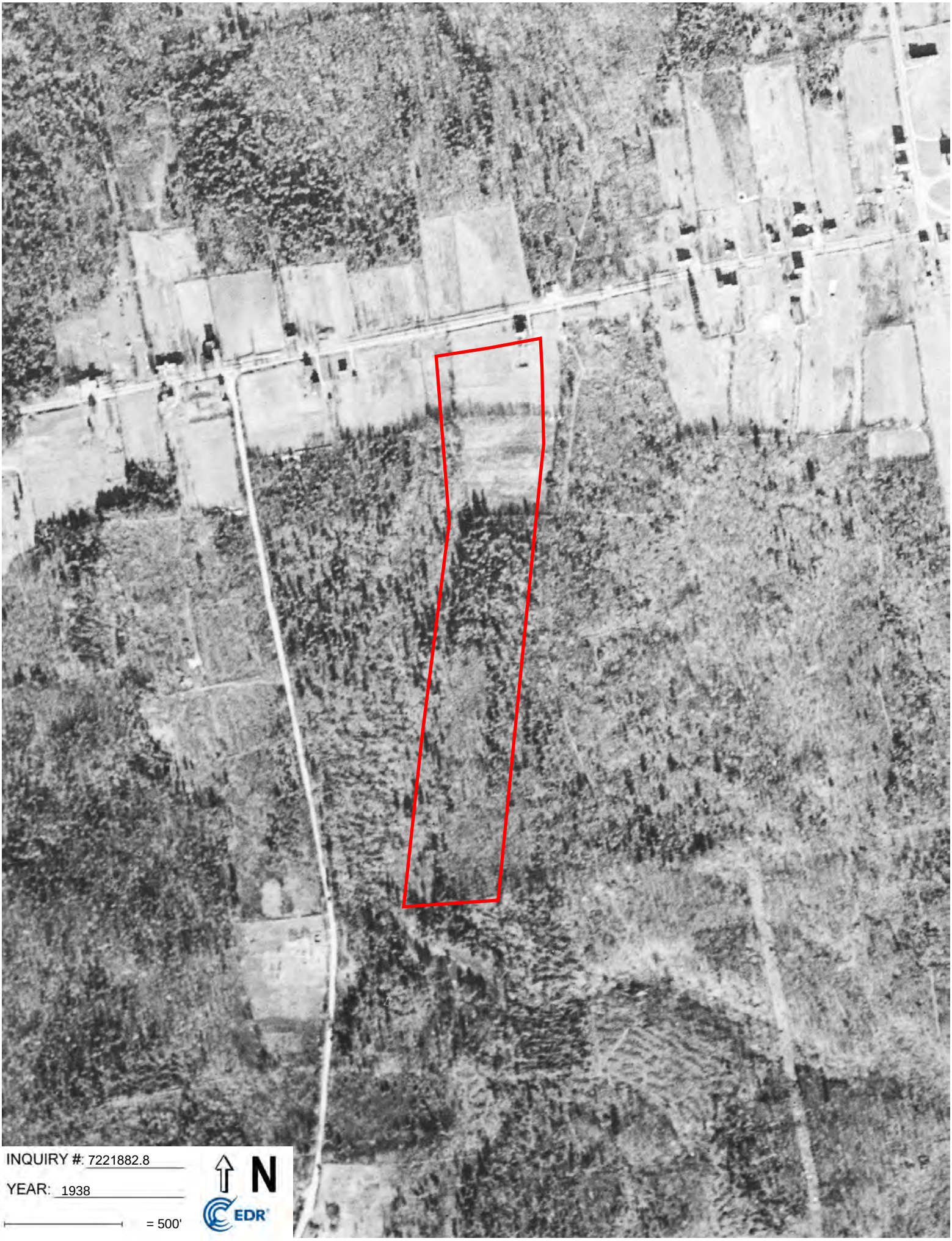
EDR


INQUIRY #: 7221882.8
YEAR: 1938
= 500'
N
EDR

66 Leverett Road

66 Leverett Road

Shutesbury, MA 01072

Inquiry Number: 7221882.4

January 10, 2023

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

01/10/23

Site Name:	Client Name:
66 Leverett Road	Fuss & O'Neill
66 Leverett Road	317 Iron Horse Way
Shutesbury, MA 01072	Providence, RI 02908
EDR Inquiry # 7221882.4	Contact: Clifford Otis

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Fuss & O'Neill were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	20091032.A22	**Latitude:**	42.447711 42° 26' 52" North
Project:	Shutesbury Library	**Longitude:**	-72.416233 -72° 24' 58" West
		UTM Zone:	Zone 18 North
		UTM X Meters:	712481.47
		UTM Y Meters:	4702721.66
		Elevation:	1191.00' above sea level

Maps Provided:

2018	1943
2015	1942
2012	1908
1990	1893
1979	1890
1975	
1964	
1950	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets

Shutesbury
2018
7.5-minute, 24000

2015 Source Sheets

Shutesbury
2015
7.5-minute, 24000

2012 Source Sheets

Shutesbury
2012
7.5-minute, 24000

1990 Source Sheets

Shutesbury
1990
7.5-minute, 25000
Aerial Photo Revised 1981

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1979 Source Sheets

Shutesbury
1979
7.5-minute, 25000
Aerial Photo Revised 1975

1975 Source Sheets

Shutesbury
1975
7.5-minute, 25000
Aerial Photo Revised 1975

1964 Source Sheets

Shutesbury
1964
7.5-minute, 24000

1950 Source Sheets

Shutesbury
1950
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1943 Source Sheets

Shutesbury
1943
7.5-minute, 31680

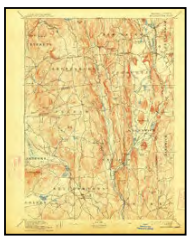
1942 Source Sheets

Shutesbury
1942
7.5-minute, 31680

1908 Source Sheets

Ware
1908
30-minute, 125000

1893 Source Sheets

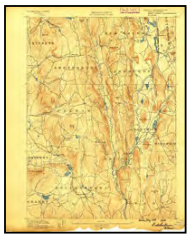


Belchertown
1893
15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

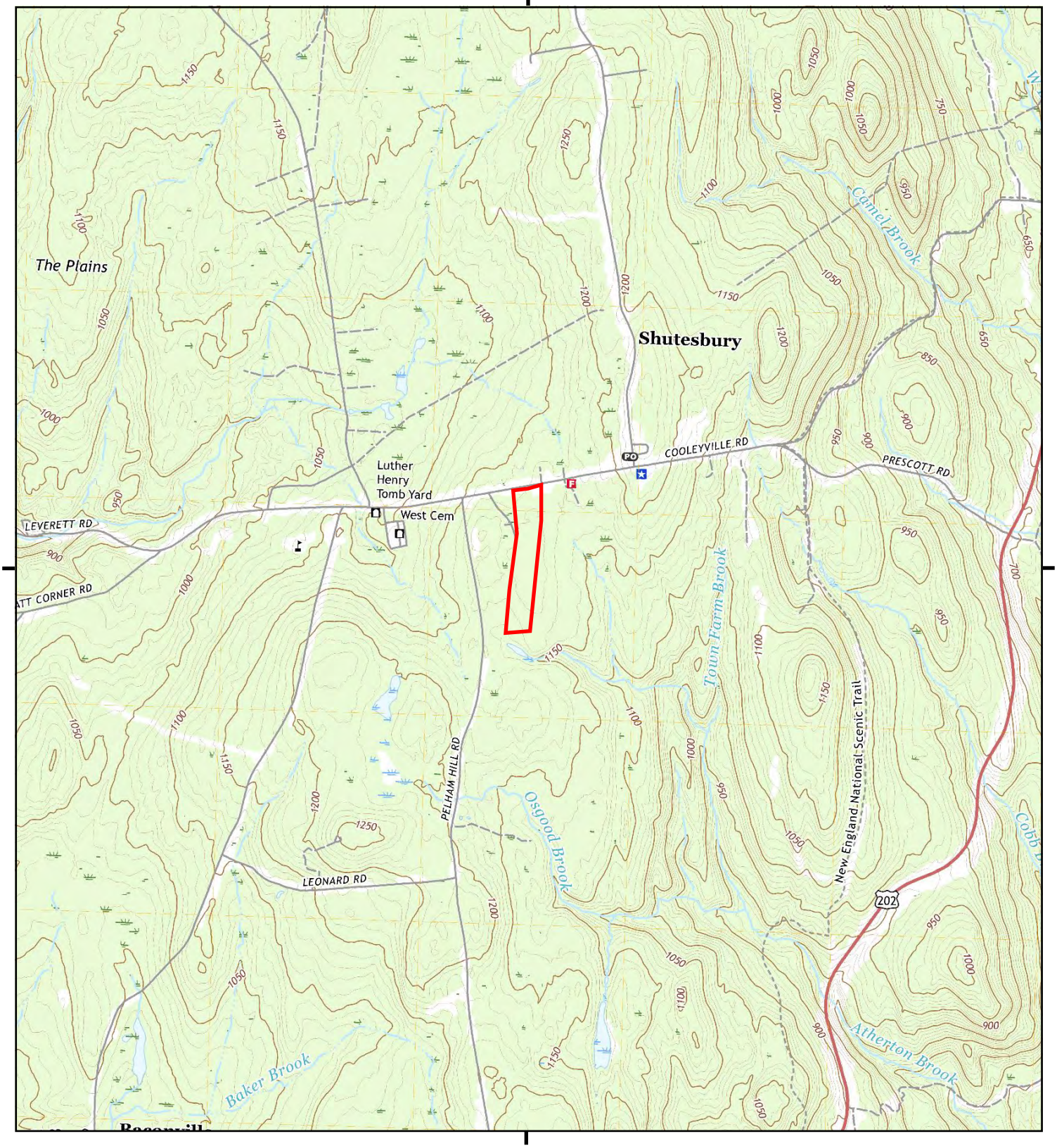
1890 Source Sheets



Belchertown
1890
15-minute, 62500

Historical Topo Map

2018



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

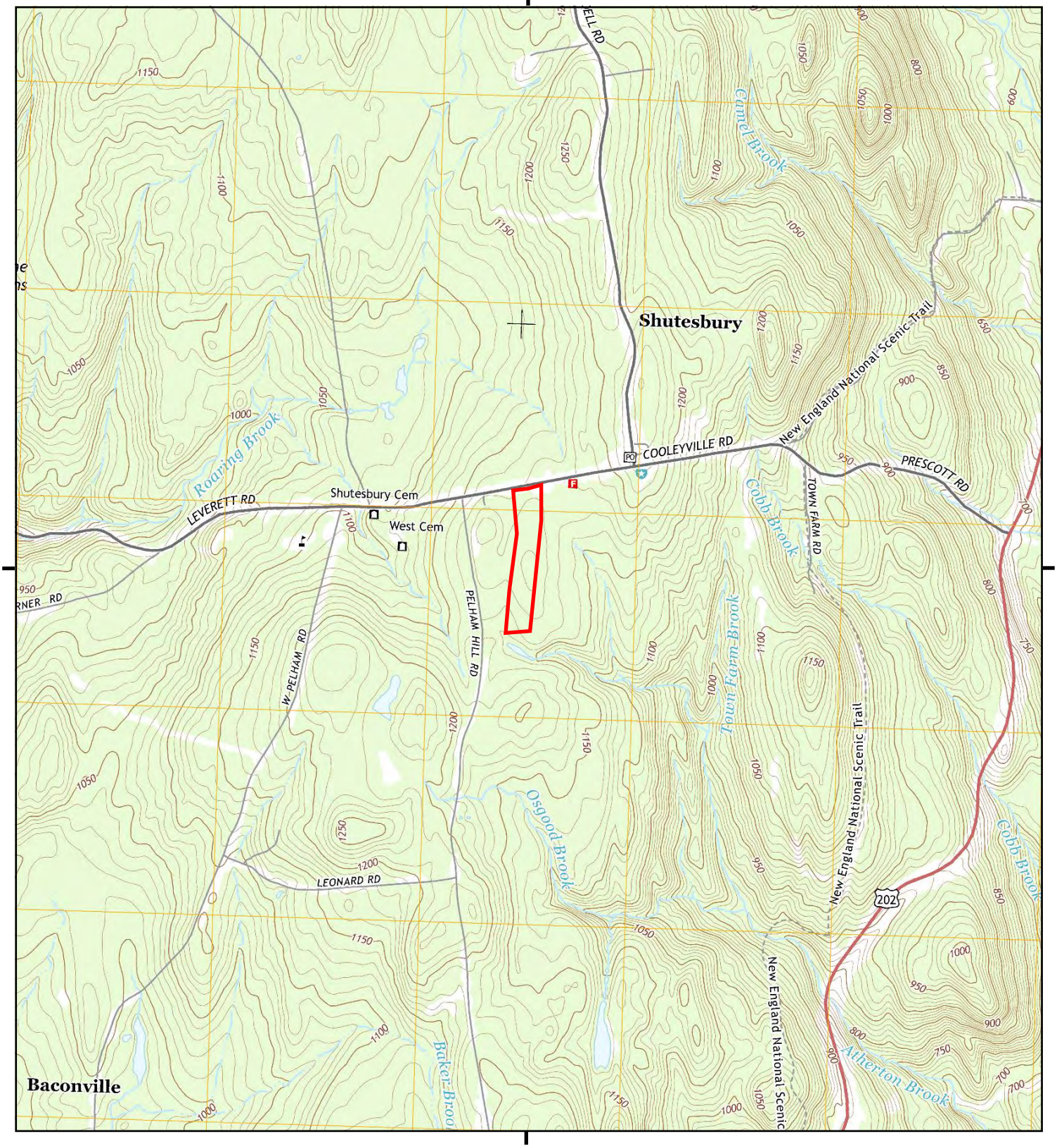
TP, Shutesbury, 2018, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N

Historical Topo Map

2015



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W E
SW S SE

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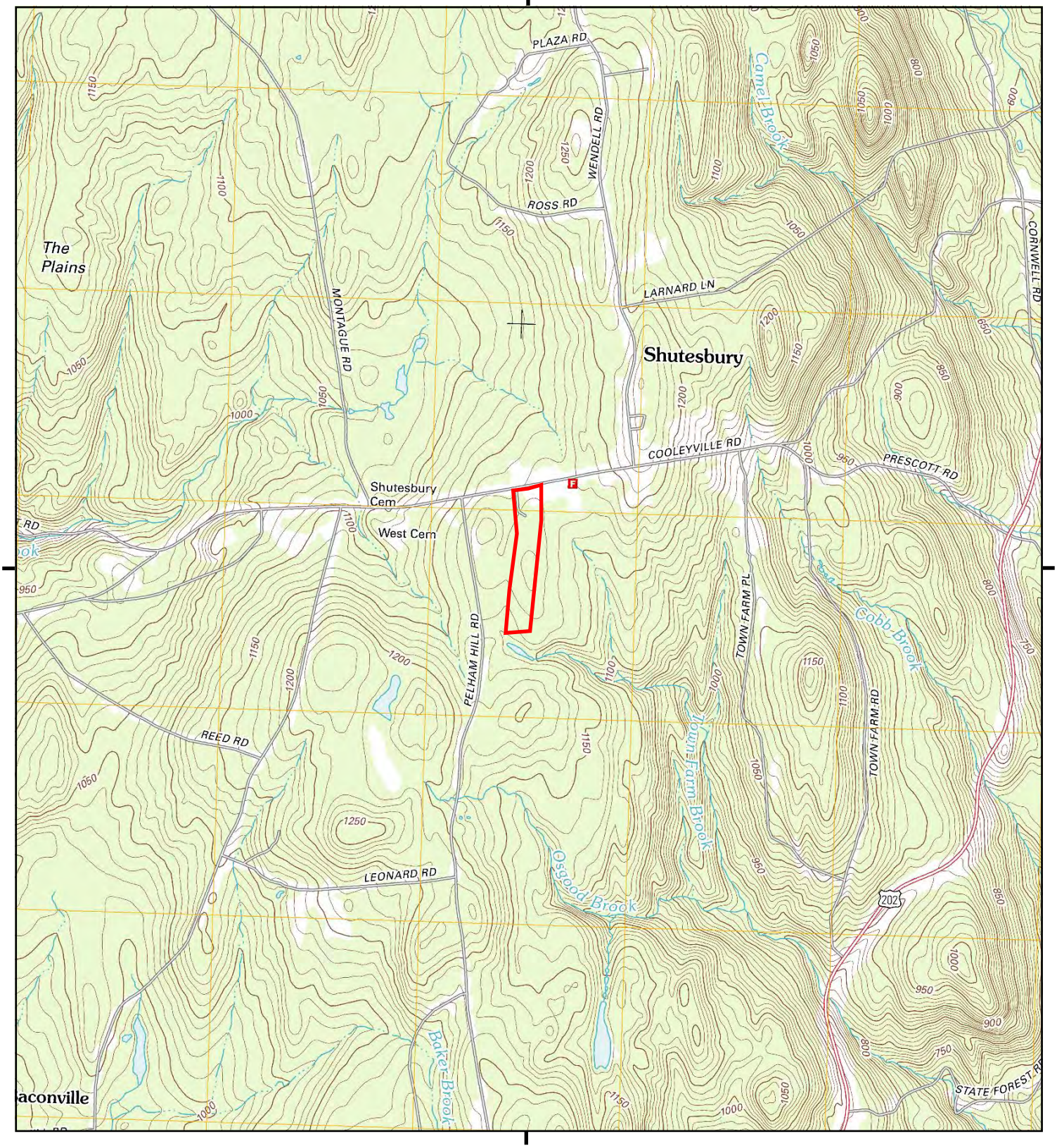
SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



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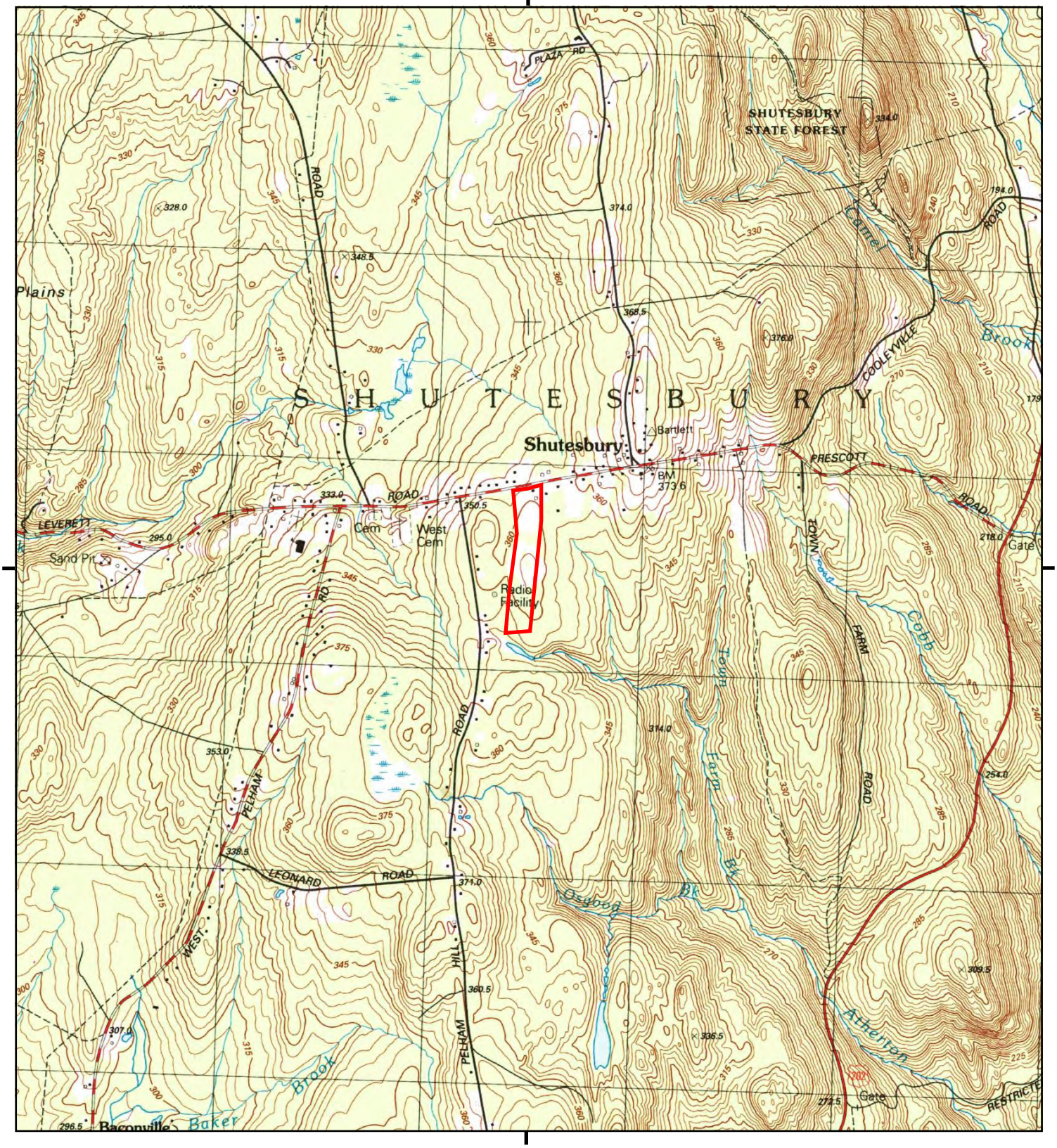
NW N NE
W E
SW S SE

TP, Shutesbury, 2012, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

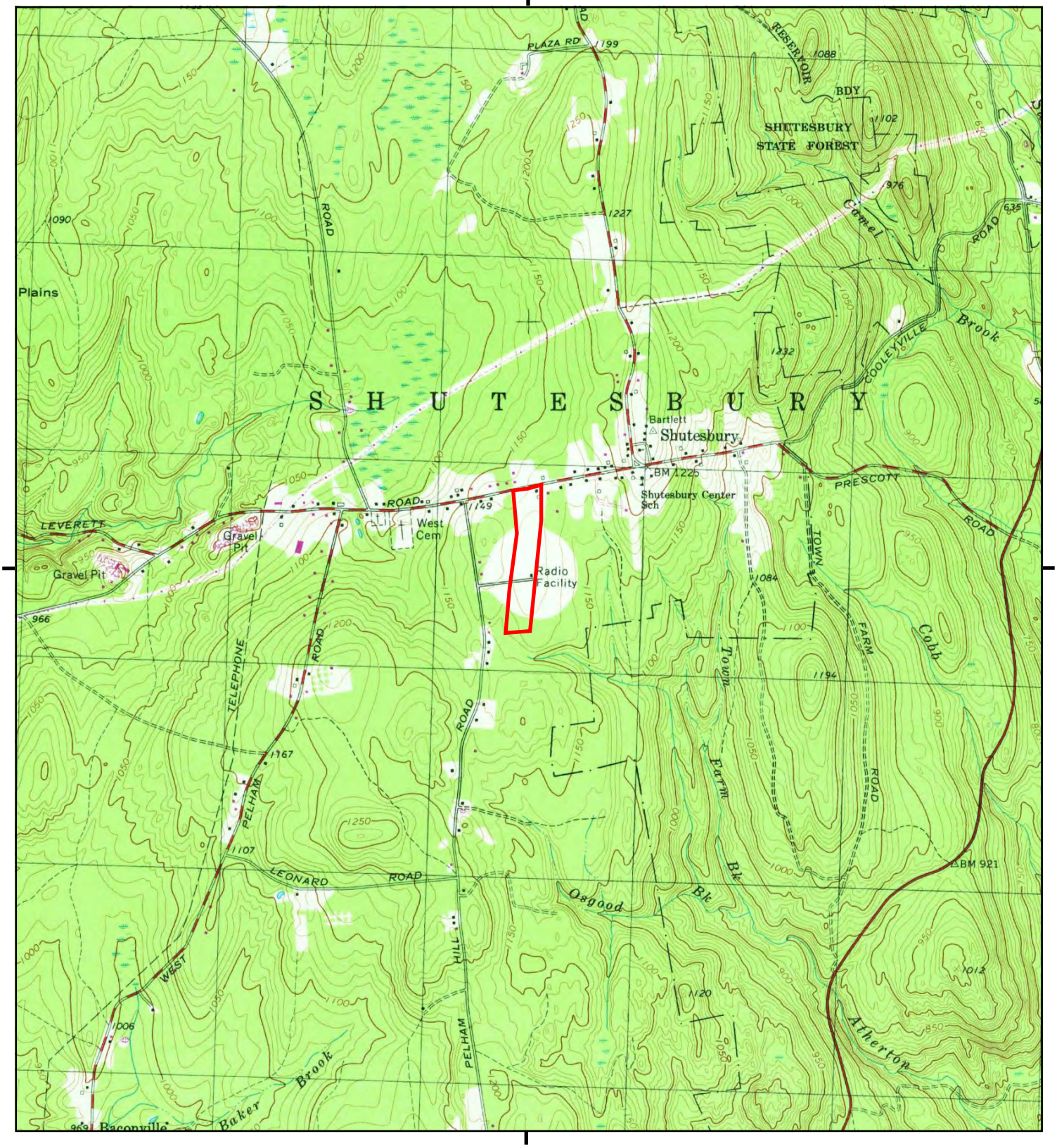
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Shutesbury, 1990, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

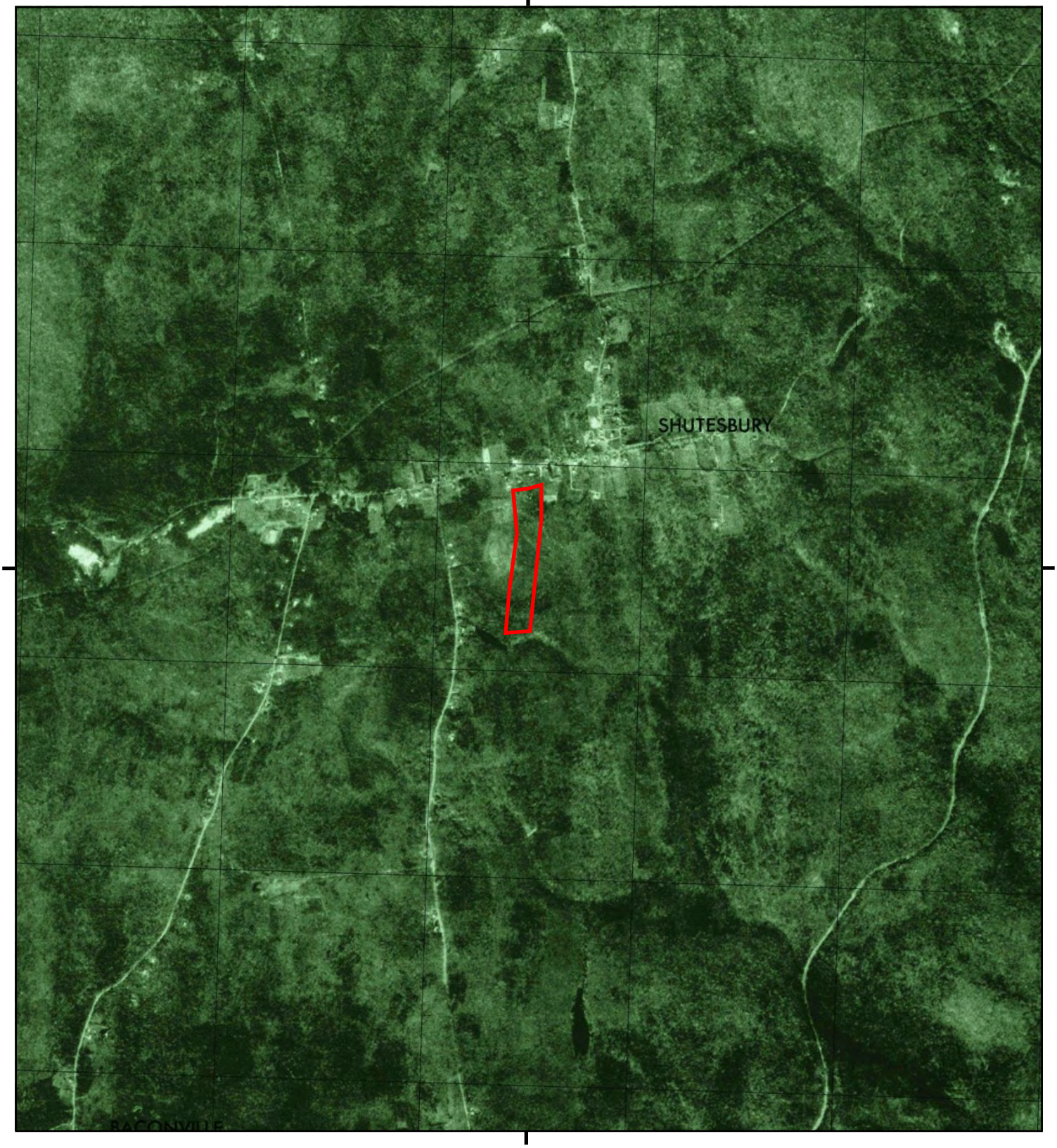
TP, Shutesbury, 1979, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N

Historical Topo Map

1975



This report includes information from the following map sheet(s).

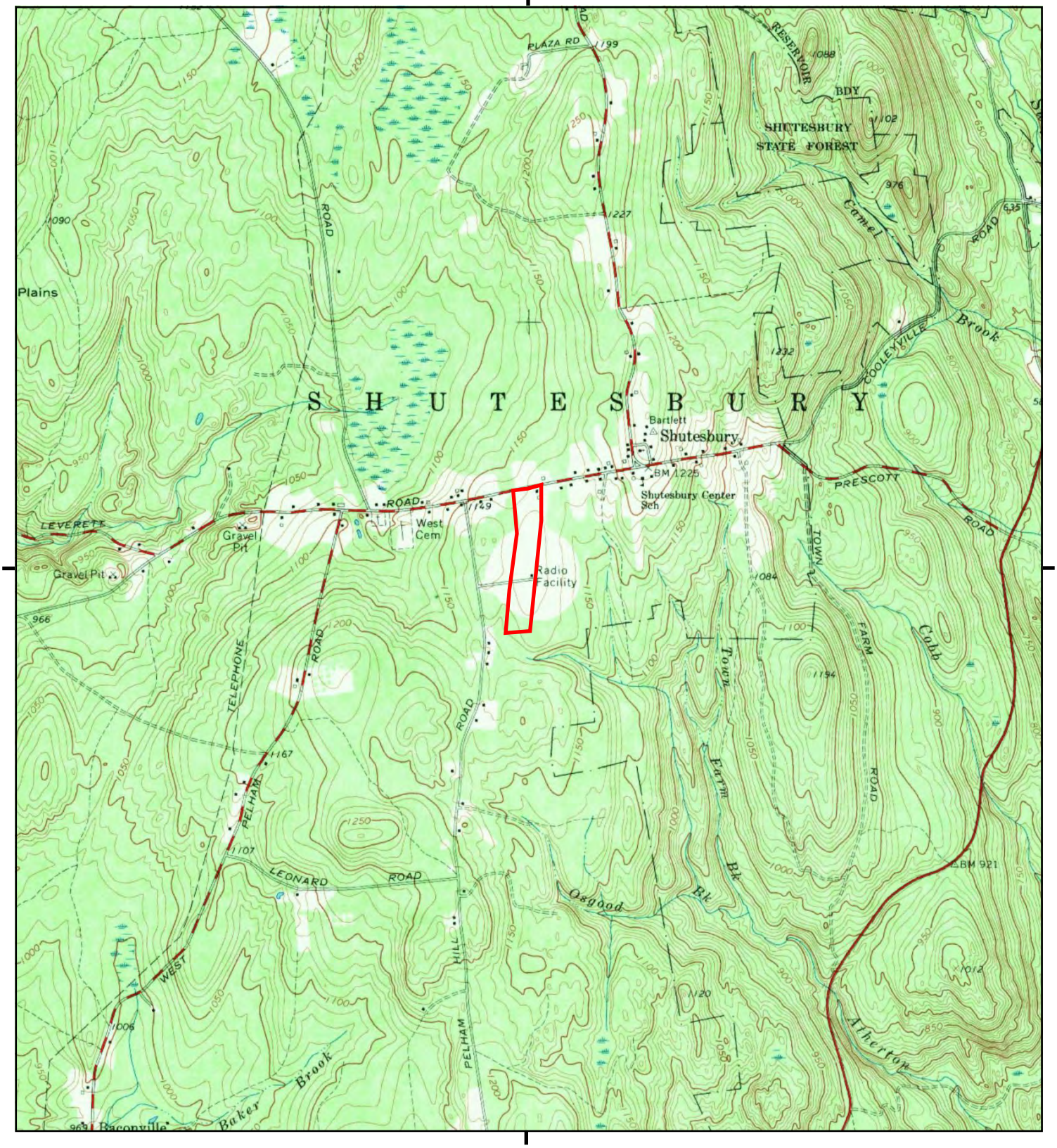
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Shutesbury, 1975, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

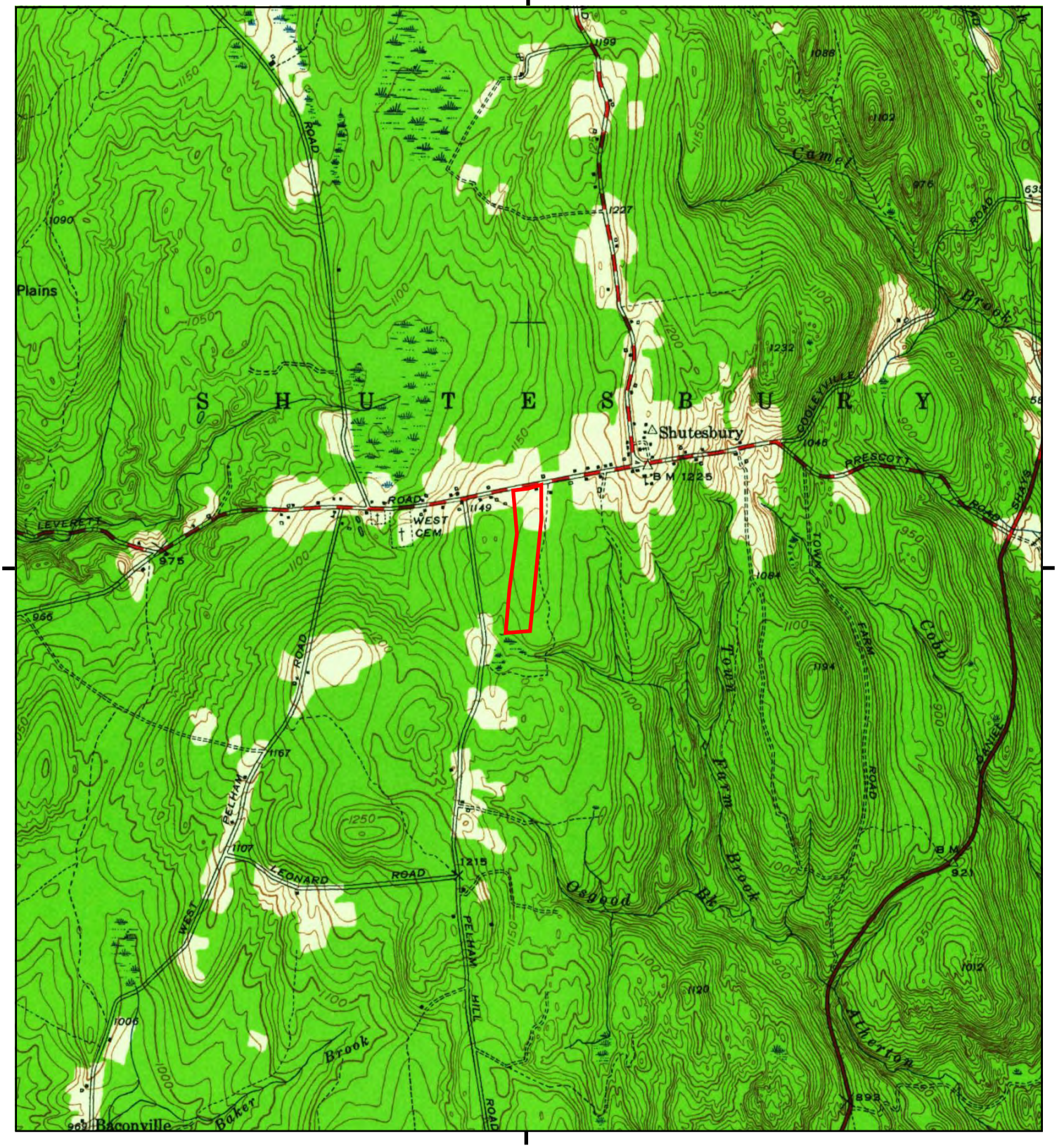
TP, Shutesbury, 1964, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N

Historical Topo Map

1950



This report includes information from the following map sheet(s).

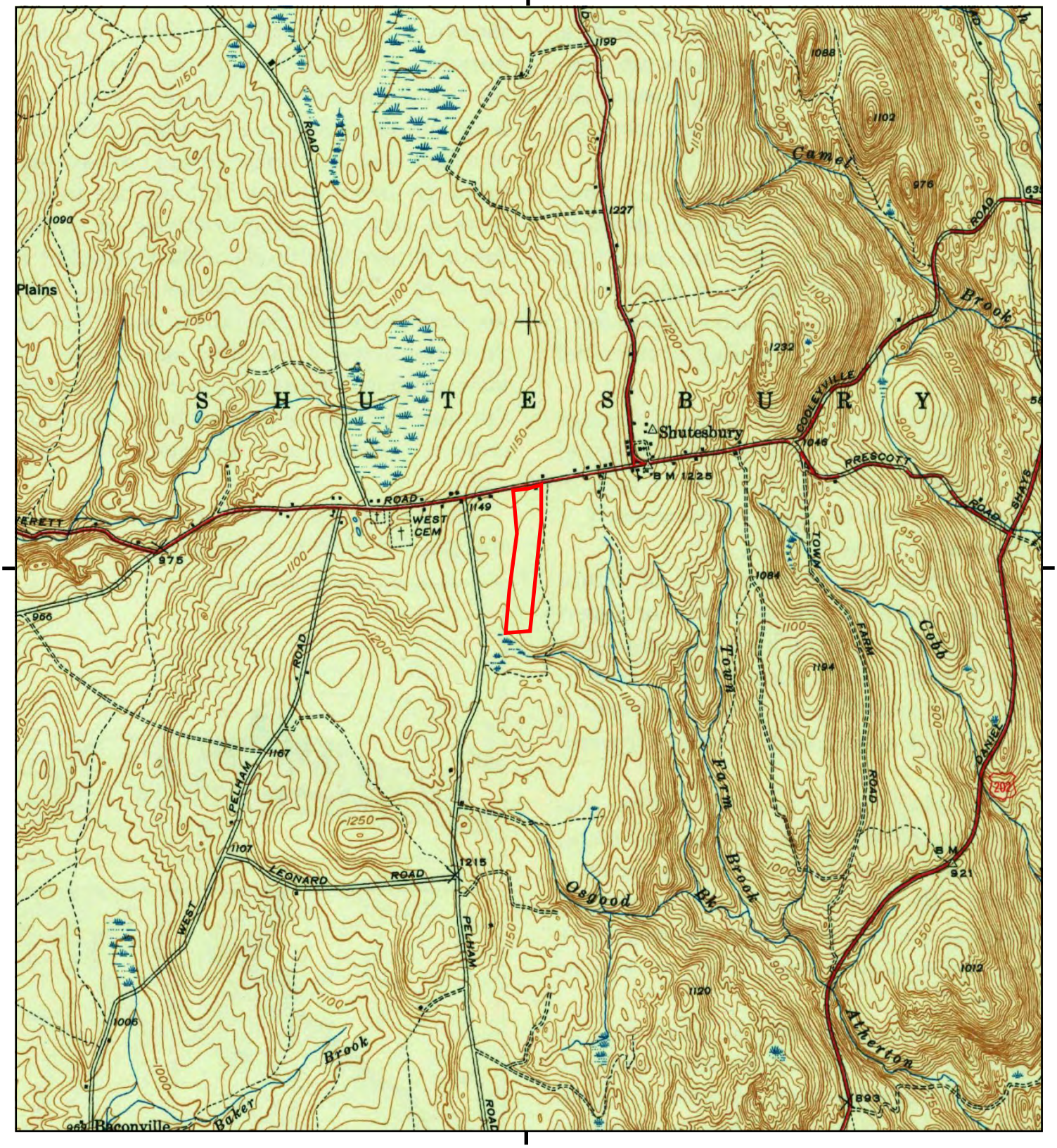
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Shutesbury, 1950, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

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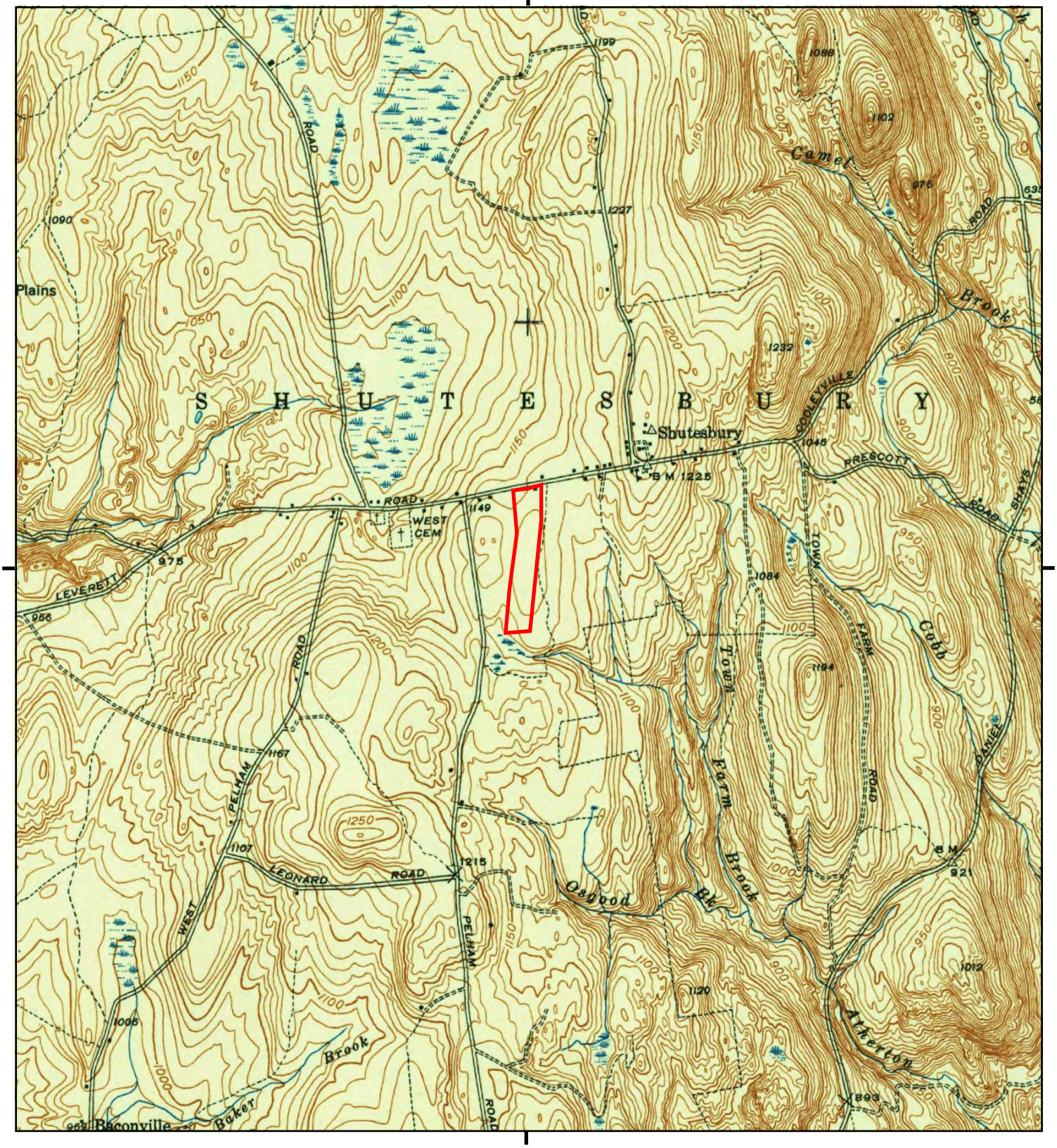
SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

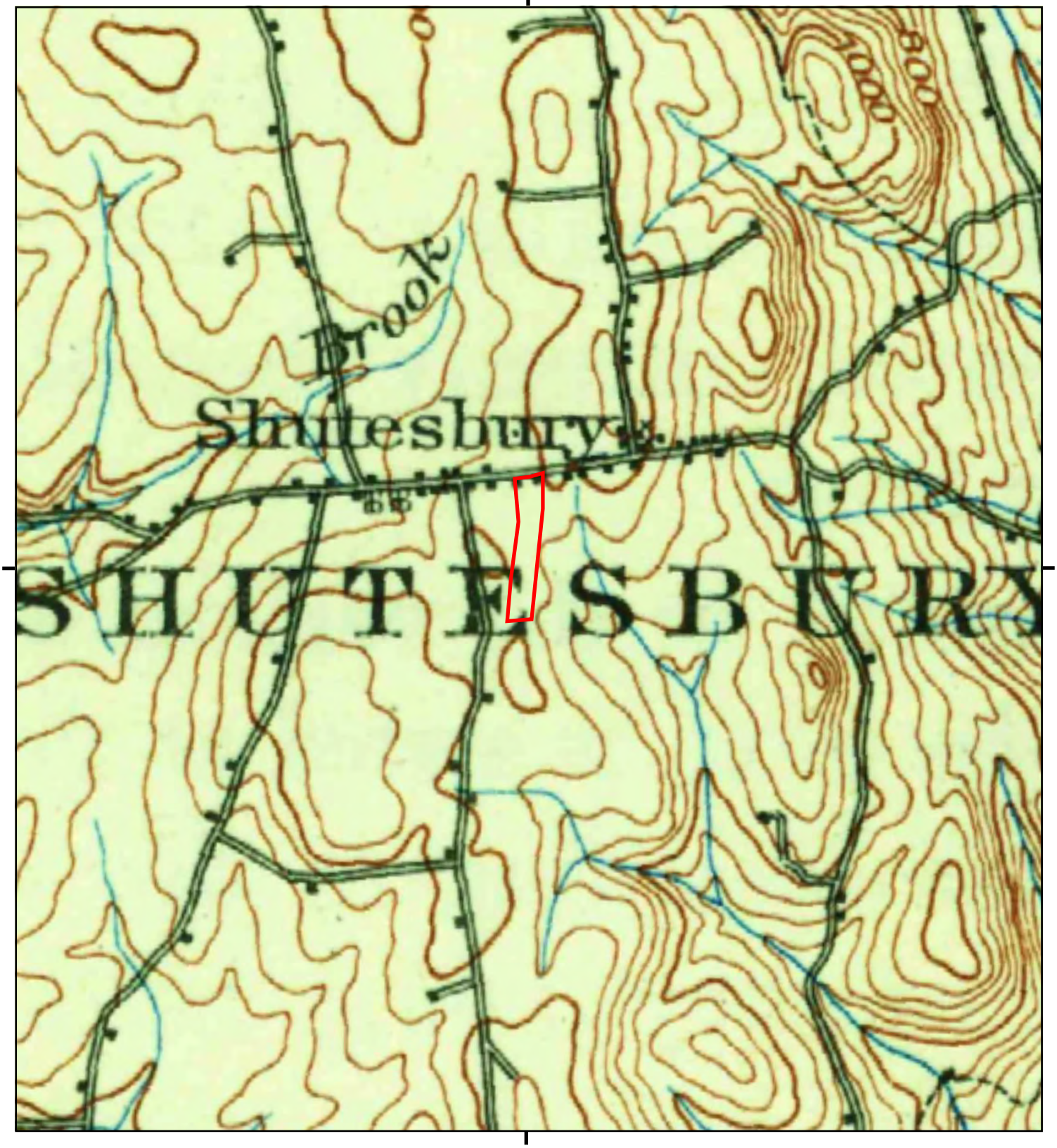
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Shutesbury, 1942, 7.5-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

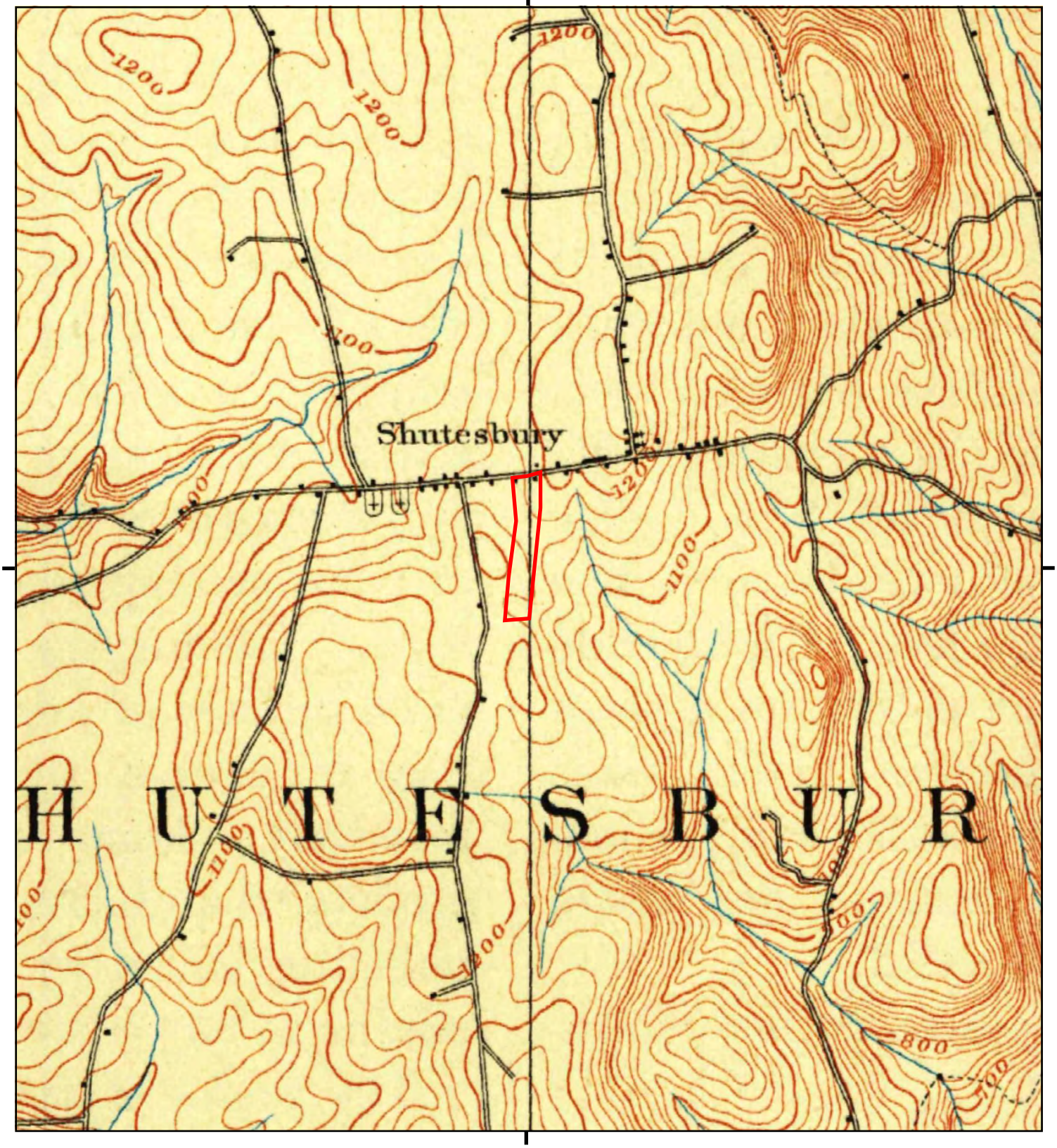
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ware, 1908, 30-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

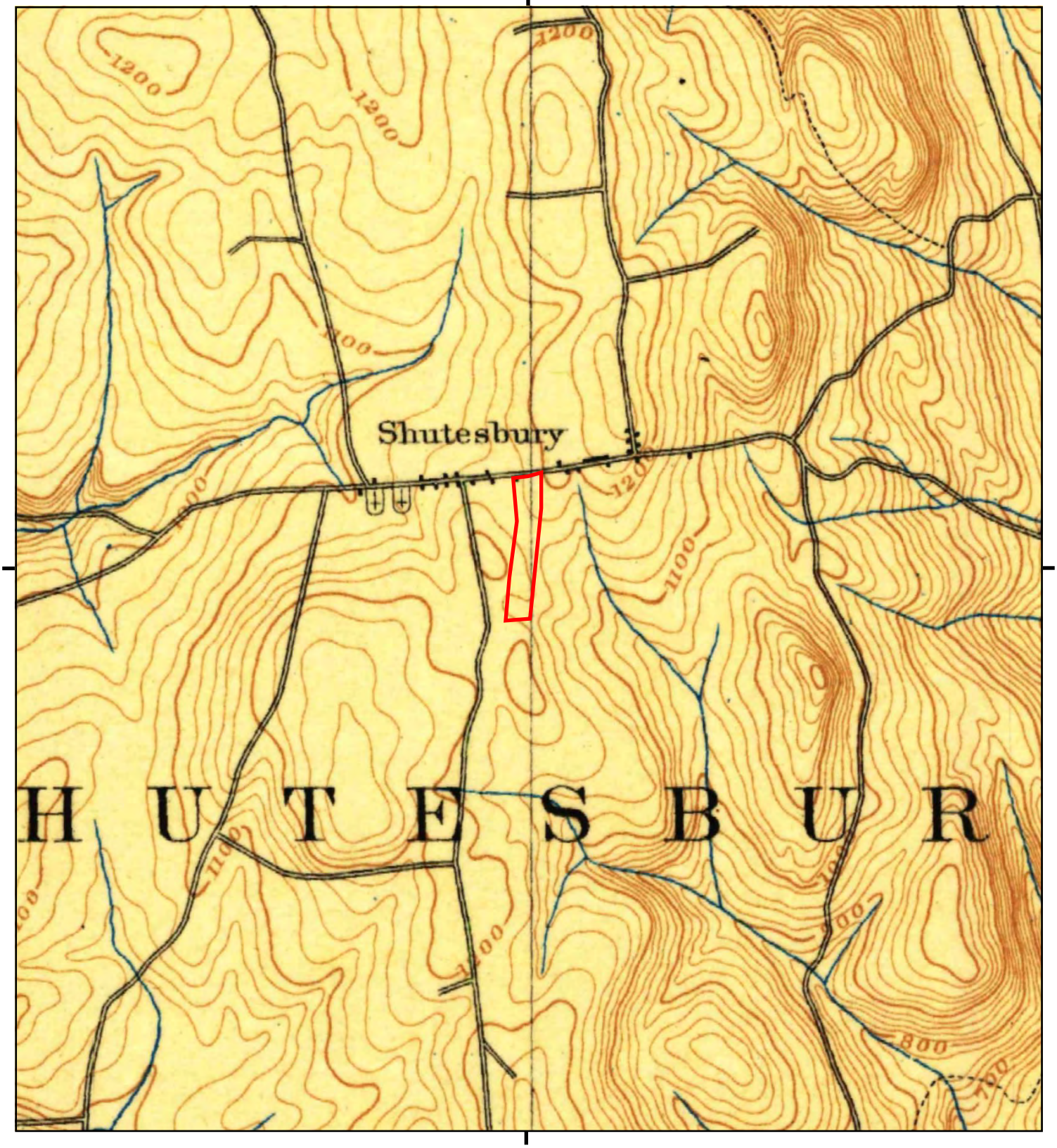
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Belchertown, 1893, 15-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Belchertown, 1890, 15-minute

SITE NAME: 66 Leverett Road
ADDRESS: 66 Leverett Road
Shutesbury, MA 01072
CLIENT: Fuss & O'Neill

N

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

J2060-02-01
October 5, 2021

Town of Shutesbury
MN Spear Memorial Library
P.O. Box 276
Shutesbury, Massachusetts 01072

Attn: Ms. Mary Anne Antonellis, Library Director

Re: Limited Subsurface Assessment
66 Leverett Road, Parcel O-32
Shutesbury, Massachusetts

Dear Ms. Antonellis:

On behalf of the Town of Shutesbury, O'Reilly, Talbot & Okun Associates, Inc. (OTO) is pleased to provide the results of our limited subsurface assessment at the above referenced property (the Site). Our assessment was performed in general accordance with our proposal for environmental services to the Town of Shutesbury dated August 30, 2021. This report is subject to the Limitations in Appendix A.

BACKGROUND

The subject Site consists of one 21.2-acre parcel of land owned by the Town of Shutesbury (parcel ID# O-32). It is OTO's understanding that the northern portion of the Site is being considered for the construction of a new town library. Existing groundwater well MW-2D was installed on the property in 2014 by Cushing & Sons, Inc. on behalf of the Town. This well is a bedrock monitoring well drilled to approximately 100 feet below the ground surface (open-borehole) with a 6-inch diameter steel casing sticking up above the ground surface. The Town is assessing whether groundwater from this well might be a suitable future source of drinking water.

The northern portion of the property formerly contained a residence and detached garage building which have been demolished by the Town. The Town also recently removed areas of debris and common trash left on the northern portion of property by others. The southern portion of the Site is wooded with some overgrown trails. The southern portion was historically used by the Air Force for a terminal very high frequency omni-directional range (TVOR) facility, a type of short-range radio navigation system for aircraft.

For OTO's review, the Town of Shutesbury provided copies of an *Updated Environmental Transaction Screen* by Fuss & O'Neill, dated December 29, 2010, a prior *Environmental Transaction Screen by* Fuss & O'Neill, dated July 14, 2010, a *Release Retraction Documentation* letter for Release Tracking Number (RTN) 1-

18707 prepared by Cold Spring Environmental Consultants, Inc, dated May 30, 2012, and monitoring well completion reports from 2014 by Cushing & Sons, Inc. There is no mention of the former TVOR facility in the documents provided to OTO.

Based on limited information available on the U.S. Army Corps of Engineers website[1], the former TVOR facility was known as the Westover Remote Site under the federal Formerly Used Defense Sites (FUDS) Program. The United States leased the Site along with leaseholds/purchase on other surrounding land in 1957. The Air Force constructed a circular concrete TVOR pad with tower and an Emergency Power Unit Shelter (4'x8') at the site and an associated underground fuel storage tank. Thirty-five wooden posts in a 100-foot radius around the TVOR pad were constructed to be used in conjunction with the TVOR facility to affect the transmission. The Air Force used the site until 1967; the leaseholds apparently were not extended beyond June 1967. In 1992, the Department of Defense Installation Restoration Program (IRP) recommended to remove one 275-gallon underground storage tank (UST), contents, piping and any contaminated soil. Soil sampling throughout the site was also recommended. By August 1995, it appears that approximately 100 tons of hydrocarbon contaminated soil was removed, and test pits were conducted. It is unknown whether the UST was removed from the property.

The MassDEP on-line Phase I Site Assessment Map of the vicinity is in Appendix B. A wetland area and hydraulic divide is mapped at the Site. Zone A surface water buffer areas are mapped to the east and south of the Site. The Site is more than 500 feet from a public water supply line. Therefore, for the purposes of groundwater and soil classification under the Massachusetts Contingency Plan, groundwater is classified as RCGW-1 and soil is classified as RCS-1.

SITE VISIT

On September 8, 2021, OTO walked the Site with the Shutesbury Town Manager and Library Director to select and pre-mark soil boring locations (B-1 through B-10) based on the following rational and former Site features:

- B-1: former garage area;
- B-2: outside storage area behind former garage ;
- B-3: down-gradient of former garage and former garage UST;
- B-4: proposed footprint of new library building;
- B-5: proposed footprint of new library building;
- B-6: proposed area for a new septic system leach field;
- B-7: area of removed debris;
- B-8: area of removed debris;
- B-9: concrete pad for an unknown abandoned utility/feature;
- B-10: area of removed debris and removed abandoned car.

[1] https://fudsportal.usace.army.mil/ems/ems/inventory/map/map?id=59569

SOIL ASSESSMENT

On September 16, 2021, Martin Geo/Environmental, LLC and OTO performed ten soil borings (B-1 through B-10) at the locations shown on the attached Figures with a direct-push drill rig. OTO logged the borings, field screened soil samples with a photo-ionization detector (PID) and retained soil samples for laboratory analysis. Soil descriptions and field data is summarized within the boring logs in Appendix C.

Soil samples were selected for laboratory analysis based on the location, depth, and field observations considering conceptual models for a release of oil or hazardous material to the environment. Samples were analyzed for volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), volatile and extractable petroleum hydrocarbons (VPH/EPH) by Con-Test, a Pace Analytical Laboratory, in East Longmeadow, Massachusetts. Laboratory analytical reports are attached in Appendix D.

No constituents of concern were detected above laboratory method reporting limits in soil samples analyzed from borings B-1 through B-8, and B-10. VPH was detected in a soil sample collected from 8 to 10 feet below the ground surface at boring B-9, which was adjacent to a concrete pad. The B-9 detections are summarized on Table 1 and compared against the reportable concentrations listed under 310 CMR 40.1600 of the Massachusetts Contingency Plan (MCP). As indicated the C5-C8 aliphatic hydrocarbon concentration of 100 mg/Kg is equal to the reportable concentration for RCS-1 classified soil.

GROUNDWATER SAMPLING AND ANALYSIS

On September 8, 2021, OTO collected a groundwater sample from monitoring well MW-2D. Groundwater was measured approximately 8 feet below the ground surface. Purging and sampling was performed using high-density polyethylene tubing connected to a down well pump. The sample was preserved in laboratory provided glassware and submitted to Con-Test. Con-Test analyzed the sample for VOCs, per- and polyfluoroalkyl substances (PFAS), PCBs, total coliform bacteria, pH, color, turbidity, hardness, iron, manganese, sodium, nitrate and nitrite. The laboratory analytical report is included in Appendix D. A sampling record is in Appendix E.

As indicated in the laboratory report, no VOCs, PFAS or PCBs were detected in the groundwater sample from MW-2D. The groundwater sample was turbid with low levels of total coliform bacteria, iron, and manganese detected in the sample.

OPINIONS AND CONCLUSION

No constituents of concern were detected in soil samples analyzed from borings B-1 through B-8 in the vicinity of the proposed library project.

Pursuant to 310 CMR 40.0315(3), the concentration of C5-C8 aliphatic hydrocarbons detected in soil at boring B-9 is a condition which requires release notification to MassDEP. The hydrocarbon profile detected is consistent with impacts frequently associated with releases of gasoline. Under the MCP at 310 CMR 40.0315, persons required to notify under 310 CMR 40.0331 shall inform MassDEP within 120 days after obtaining knowledge of a release to the environment indicated by the measurement of oil in soil in an amount equal to or greater than the applicable Reportable Concentration listed at 310 CMR 40.1600. We recommend providing notice to MassDEP on or before January 28, 2022, based on the date of receipt of the laboratory report. Further assessment is warranted to evaluate the source, nature, and extent of the release detected at boring B-9.

No VOCs, PFAS or PCBs were detected in the groundwater sample from well MW-2D. Due to the low levels of total coliform bacteria, iron, turbidity, and manganese detected in the sample, further well development and/or treatment would be necessary for groundwater from this well to be suitable for drinking. We recommend contacting a company that specializes in drinking water supply well installation, maintenance, and compliance.

We appreciate the opportunity to assist you on this project. Please contact us if you have any questions.

Sincerely,
O'Reilly, Talbot & Okun Associates, Inc.

Erica L. Escobar
Staff Scientist

Mark E. O'Malley
Project Manager

Sabrina A. Moreau
Project Manager, reviewer

Attachments:

FIGURES

Table 1	Soil Analytical Results
Table 2	Groundwater Analytical Results

FIGURES

Figure 1	Site Locus
Figure 2	Site Plan
Figure 3	Site Detail Plan

APPENDICES

Appendix A	Limitations
Appendix B	Phase I Site Assessment Map
Appendix C	Boring Logs
Appendix D	Laboratory Analytical Report
Appendix E	Groundwater Sampling Record

O:\J2000\2060 Town of Shutesbury\02-01 Library Project\Report 66 Leverett

TABLES

Table 1
Soil Analytical Results
Volatile Petroleum Hydrocarbons (VPH)
Concentrations in mg/kg
66 Leverett Road
Shutesbury, Massachusetts

Sample No.:	**B-9**	**Reportable Conc. RCS-1**
Depth (feet):	8-10'	
Date Collected:	9/16/21	
PID Reading (ppmv):	780	NA
VPH Fractions		
C5-C8 Aliphatics	**100**	100
C9-C12 Aliphatics	89	1,000
C9-C10 Aromatics	66	100
VPH Target Compounds		
Benzene	0.3	2
Ethylbenzene	0.18	40
Methyl tert-butyl ether	<0.085	0.1
Naphthalene	0.54	4
Toluene	<0.085	30
Xylenes (total)	0.48	100
VOCs by 8260		
n-Butylbenzene	1.2	NS
sec-Butylbenzene	0.28	NS
Isopropylbenzene	0.25	1,000
n-Propylbenzene	1.6	100
1,2,4-Trimethylbenzene	2.1	1,000
1,3,5-Trimethylbenzene	3.2	10

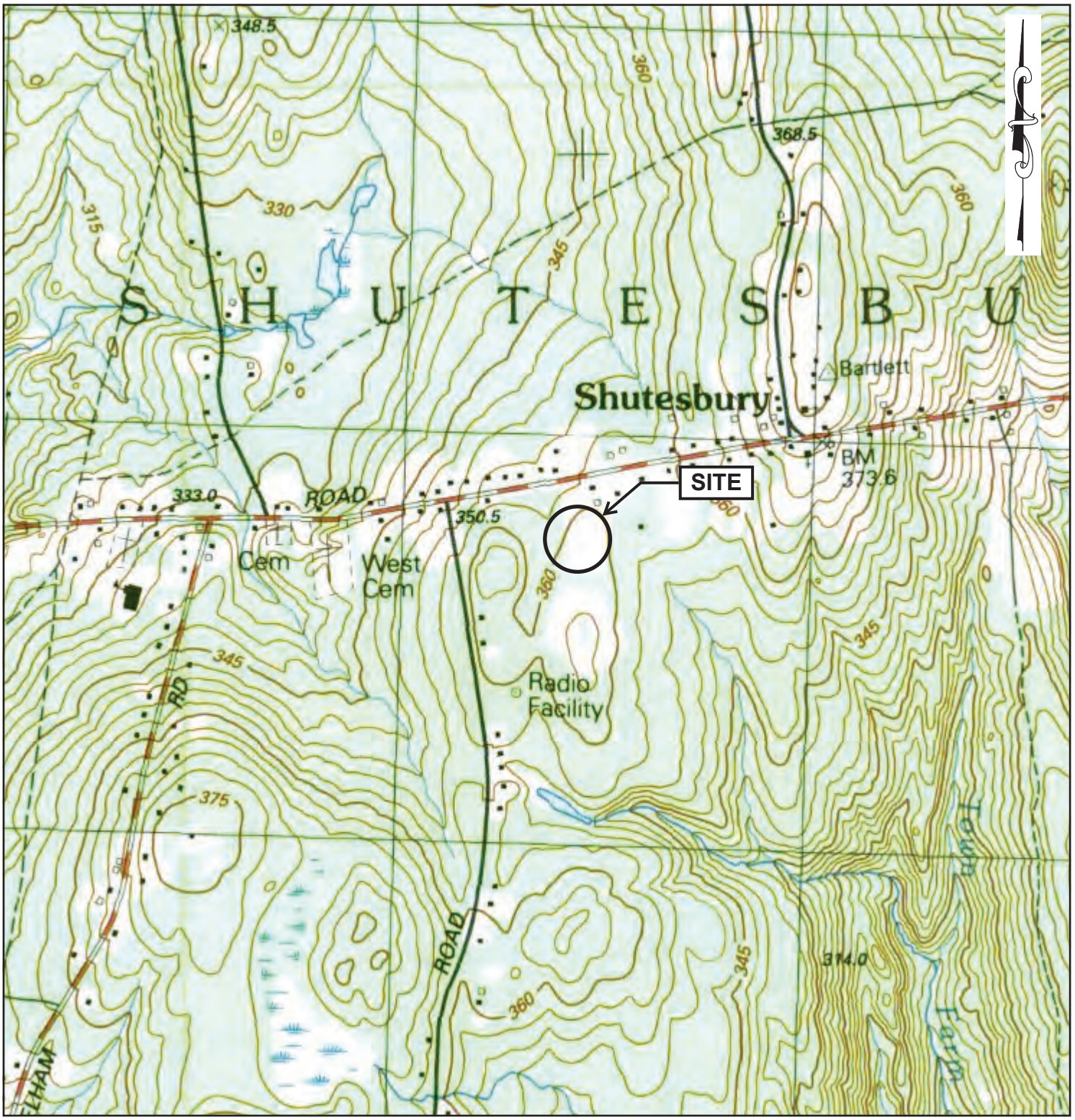
NOTES:
1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. "PID"=Photoionization detector soil headspace measurement in
5. Only analytes detected in at least one sample are shown; refer to laboratory reports for full analyte listing.
6. Values shown in **bold** are equal to or exceed Reportable Concentrations.

Table 2
Summary of Groundwater Analytical Results
66 Leverett Road
Shutesbury, MA

Sampling Location	**MW-2D**	**MCL/SMCL MA**
Sample Date:	**9/8/21**	**ORSG**
VOCs EPA 524.2 (ug/L)	Not Detected	--
PCBs SW-846 8082S (ug/L)	Not Detected	--
PFAS EPA 537.1 (ng/L)	Not Detected	--
SW-846 610D (mg/L) Metals Digestion		
Iron	**6.3**	0.3
Manganese	**0.11**	0.05
Sodium	5.6	20
Hardness	20	--
EPA 300.0 (mg/L)		
Chloride	1.2	250
Nitrate	ND (0.10)	10
Nitrite	ND (0.10)	1
SM 92238B - Colilert (MPN/100mL)		
Total Coliform	**3.1**	Absent
E. Coli	ND (1.0)	
EPA 180.1 (NTU)		
Turbidity	39	--
SM21-23 2120B (Color Units)		
Apparent Color	**75**	15
SM21-23 4500 H B (pH Units)		
pH	6.9	8.5

NOTES:
1. "ND" indicates not detected; value is quantitation limit.
2. "--" indicates no published value, compound specific or not applicable.
3. MCL/SMCL = Massachusetts Maximum Contaminant Level/Secondary Maximum Contamina
4. MA ORSG = Massachusetts Department of Environmental Protection Office of Research an Standards (ORS) Guidelines. Updated in January 2020. For reference only.
5. Values shown in **bold** exceed the MCL/SMCL or ORSG.

FIGURES



SCALE IN MILES
1" = 0.1 MILES

0.1 0 0.2

FILE

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES
293 Bridge Street, Suite 500 Springfield, MA 01103 413.788.6222
www.OTO-ENV.com

66 LEVERETT ROAD

SHUTESBURY, MASSACHUSETTS

SITE LOCUS

Topographic Map Quadrant:
SHUTESBURY, MA

Map Version: 2001

Current As Of: 2021

Date: SEPTEMBER 2021

PROJECT No.
J2060-02-01

FIGURE No.
1

FILE

66 LEVERETT ROAD
SHUTESBURY, MASSACHUSETTS

SITE PLAN

PROJECT NO. J2060-02-01

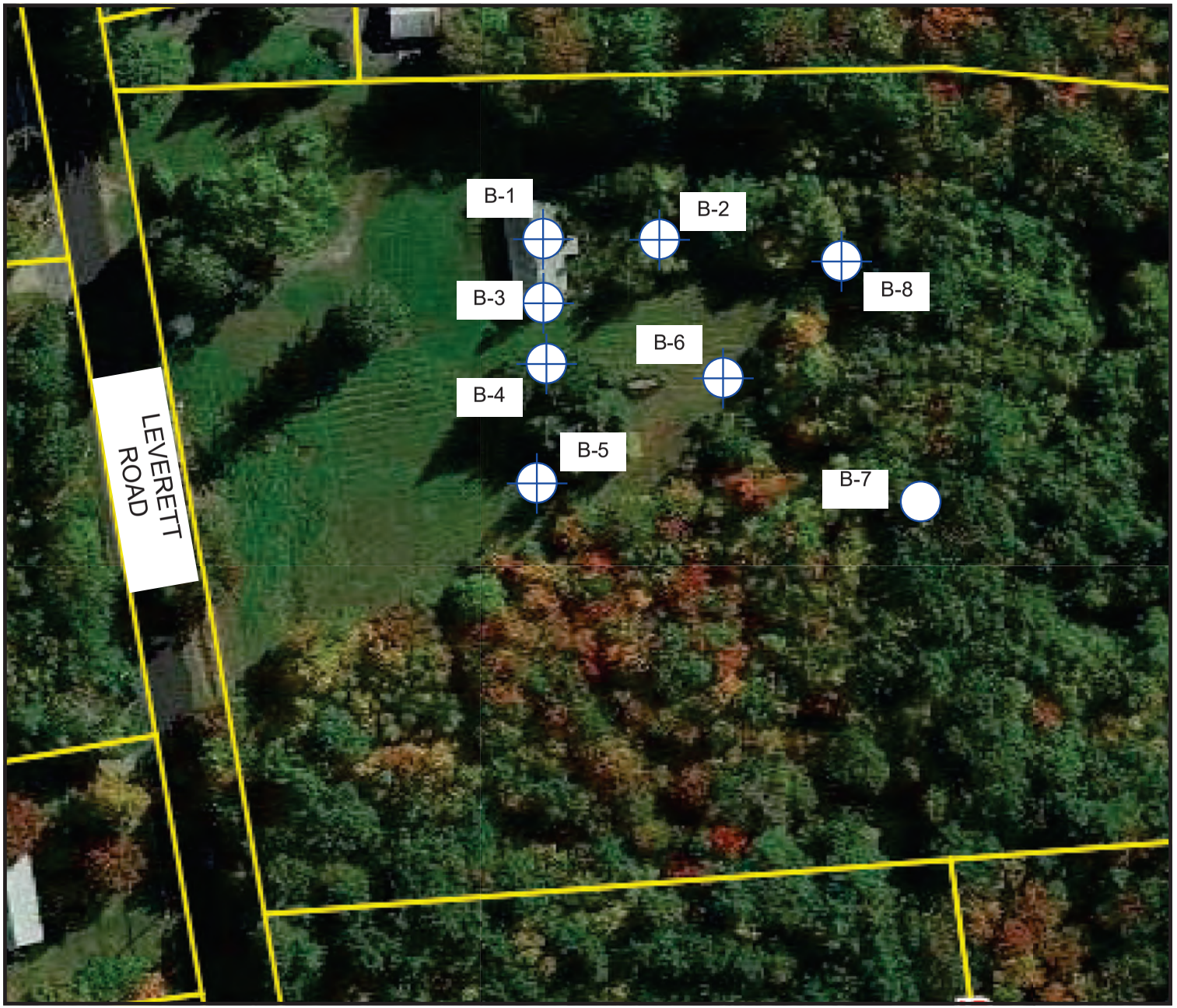
FIGURE NO. 2

Designed By: ELE
Drawn By: ELE
Checked By: MEO
Date: 09/27/2021
Source :https://www.mainstreetmaps.com/ma/shutesbury/public.asp

All features are approximate.

O'Reilly, Talbot & Okun
ENGINEERING WORKS, LLP
293 Bridge Street, Suite 500 Springfield, MA 01103 413.788.6222
www.OTO-ENV.com

FILE



APPROXIMATE
SCALE IN FEET
1" = 80'

40' 0' 80'

FIGURE No. 3

PROJECT No. J2060-02-01

66 LEVERTT ROAD
SHUTESBURY, MASSACHUSETTS

SITE DETAIL PLAN

DESIGNED BY: ELE
DRAWN BY: ELE
CHECKED BY: MEO
DATE: 9/27/2021
REV. DATE:

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES
293 Bridge Street, Suite 500 Springfield, MA 01103 413.788.6222
www.OTO-ENV.com

APPENDIX A

LIMITATIONS

1. Our report does not present scientific certainties, but rather our professional opinions on the data obtained through our assessment. Our report was prepared for the exclusive benefit of our client and its mortgage lender. Reliance upon the report and its conclusions is not made to third parties or future property owners. We would be pleased to discuss extension of reliance to third parties through execution of a written contract with such parties.
2. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the contract Terms and Conditions.
3. In preparing the report, O'Reilly, Talbot, Okun & Associates, Inc. relied on certain information provided by state and local officials and other parties referenced herein, and on information contained in prior site reports. Although there may have been some degree of overlap in the information provided by these sources, O'Reilly, Talbot, Okun & Associates, Inc. did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this assessment.
4. Observations were made of the site and of the structures on the site, as indicated within the report. Where access to portions of the site or to structures on the site was unavailable or limited, we render no opinion as to the presence of hazardous materials or oil, or to the presence of indirect information relating to hazardous materials or oil in that portion of the site. In addition, we render no opinion as to the presence of hazardous materials or oil, where direct observations of portions of the site were obstructed by objects or coverings on or over these surfaces.
5. Unless otherwise specified in the Report, we did not perform testing or analyses to determine the presence or concentration of asbestos at the site or in the environment at the site.
6. The purpose of this Report was to assess the physical characteristics of the subject site with respect to the presence of hazardous material or oil in soil or groundwater at the site. No specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.

APPENDIX B

MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

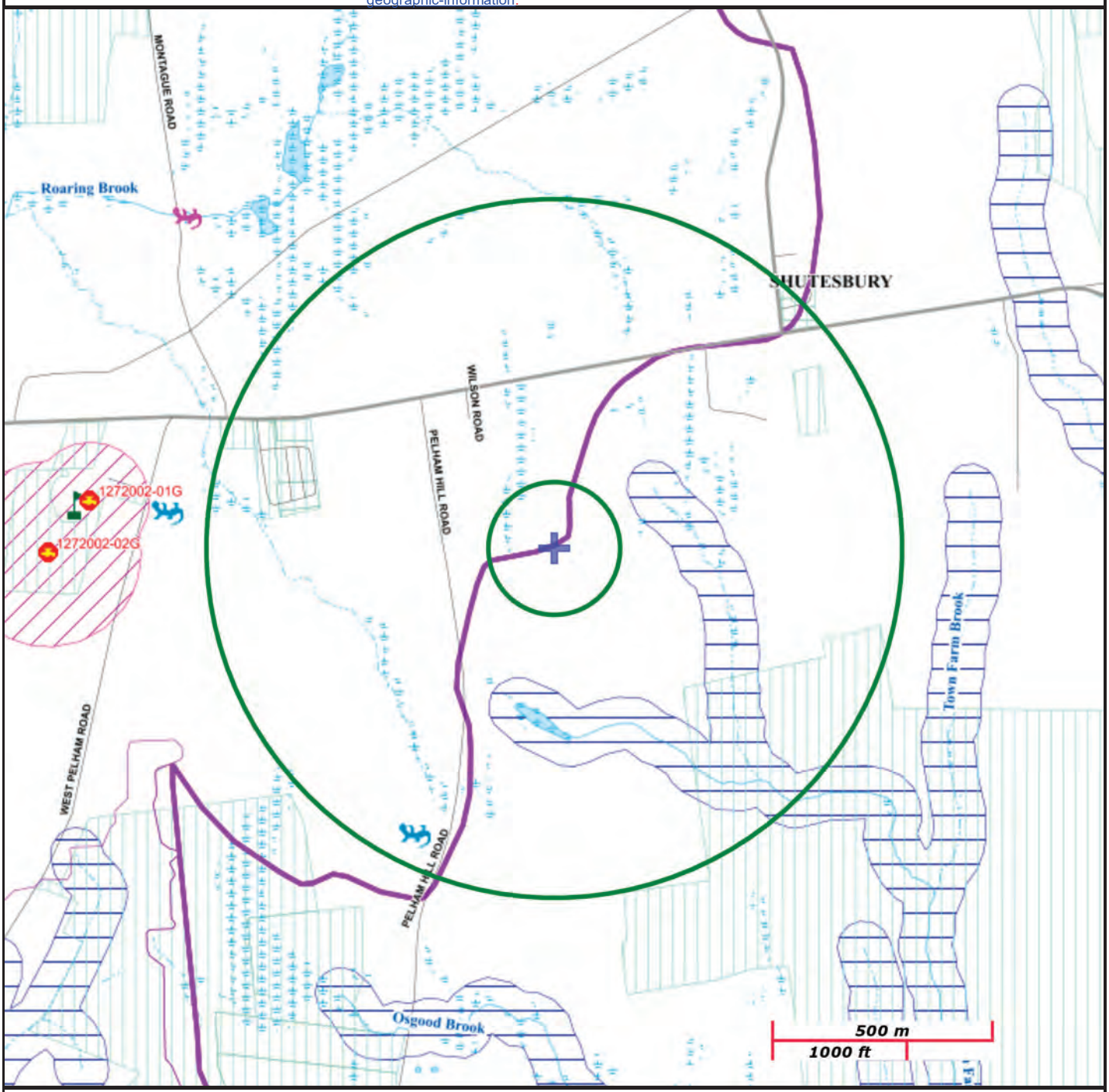
Site Information:

SHUTESBURY, MA

NAD83 UTM Meters:
4702718mN , 712465mE (Zone: 18)
September 29, 2021

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

APPENDIX C

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

BORING LOGS

SUMMARY OF THE BURMISTER SOIL CLASSIFICATION SYSTEM (MODIFIED)

RELATIVE DENSITY (of non-plastic soils) OR CONSISTENCY (of plastic soils)

STANDARD PENETRATION TEST (SPT)
Method: Samples were collected in accordance with ASTM D1586, using a 2" diameter split spoon sampler driven 24 inches. If samples were collected using direct push methodology (Geoprobe), SPTs were not performed and relative density/consistency were not reported. N-Value: The number of blows with a 140 lb. hammer required to drive the sampler the middle 12 inches. WOR: Weight Of Rod (depth dependent) WOH: Weight Of Hammer (140 lbs.)

COHESIONLESS SOILS		COHESIVE SOILS	
BLOWS/FOOT (SPT N-Value)	RELATIVE DENSITY	BLOWS/FOOT (SPT N-Value)	CONSISTENCY
0-4	Very loose	<2	Very soft
4-10	Loose	2-4	Soft
10-30	Medium dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
>50	Very dense	15-30	Very stiff
*Based upon uncorrected field N-values		>30	Hard

MATERIAL: (major constituent identified in CAPITAL letters)

COHESIONLESS SOILS		
MATERIAL	FRACTION	GRAIN SIZE RANGE
GRAVEL	Coarse	3/4" to 3"
	Fine	1/4" to 3/4"
SAND	Coarse	1/16" to 1/4"
	Medium	1/64" to 1/16"
	Fine	Finest visible & distinguishable particles
SILT/CLAY	see adjacent table	Cannot distinguish individual particles
COBBLES	3" to 6" in diameter	
BOULDERS	> 6" in diameter	
Note: Boulders and cobbles are observed in test pits and/or auger cuttings.		

COHESIVE SOILS		
SMALLEST DIAMETER	PLASTICITY	IDENTITY
None	Non-plastic	**SILT**
1/4" (pencil)	Slight	**Clayey SILT**
1/8"	Low	**SILT & CLAY**
1/16"	Medium	**CLAY & SILT**
1/32"	High	**Silty CLAY**
1/64"	Very High	**CLAY**
Wetted sample is rolled in hands to smallest possible diameter before breaking.		

ORGANIC SILT: Typically gray to dark gray, often has strong H2S odor. May contain shells or shell fragments. Light weight.

Fibrous PEAT: Light weight, spongy, mostly visible organic matter, water squeezed readily from sample. Typically near top of layer.

Fine grained PEAT: Light weight, spongy, little visible organic matter, water squeezed from sample. Typically below fibrous peat.

DEBRIS: Detailed contents described in parentheses (wood, glass, ash, crushed brick, metal, etc.)

BEDROCK: Underlying rock beneath loose soil, can be weathered (easily crushed) or competent (difficult to crush).

ADDITIONAL CONSTITUENTS

TERM	% OF TOTAL
and	35-50%
some	20-35%
little	10-20%
trace	1-10%

COMMON TERMS

Glacial till: Very dense/hard, heterogeneous mixture of sand, silt, clay, sub-angular gravel. Deposited at base of glaciers, which covered all of New England.

Varved clay: Fine-grained, post-glacial lake sediments characterized by alternating layers (or varves) of silt, sand and clay.

Fill: Material used to raise ground, can be engineered or non-engineered.

COMMON FIELD MEASUREMENTS

Torvane: Undrained shear strength is estimated using an E285 Pocket Torvane (TV). Values in tons/ft2.

Penetrometer: Unconfined compressive strength is estimated using a Pocket Penetrometer (PP). Values in tons/ft2.

RQD: Rock Quality Designation is determined by measuring total length of pieces of core 4" or greater and dividing by the total length of the run, expressed as %. 100-90% excellent; 90-75% good; 75-50% fair; 50-25% poor; 25-0% very poor.

PID: Soil screened for volatile organic compounds (VOCs) using a photoionization detector (PID) referenced to benzene in air. Readings in parts per million by volume.

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-1

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Former Garage	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		45/60	S-1 0-1	0.1	Top 6" Dark brown, MEDIUM to COARSE SAND, some gravel, moist Next 6" Brown, FINE to MEDIUM SAND, some coarse sand, moist Bottom 33" Gray, FINE SAND, some clayand gravel, moist		
			S-2 1-3	0.0			
			S-3 3-5	0.0			
5'							
		60/60	S-4 5-7		Top 20" Brown, MEDIUM to COARSE SAND, wet Bottom 40" Gray, FINE SAND, some clay and gravel, wet		
			S-5 8-10				
10'					End of Exploration at 10'		
15'							
20'							
25'							

Remarks:

PROJECT NO. **2060-02-01**

LOG OF BORING **B-1**

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-2

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Rear of garage, outside storage of drums and Misc. items	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		40/60	S-1 0-1	0.0	Top 3" Dark brown, FINE to MEDIUM SAND, some gravel, moist Bottom 27" Light brown/gray, FINE SAND, some clay and silt, moist Bottom 33" Gray, FINE SAND, some clay and gravel, moist		
			S-2 1-3	0.0			
			S-3 3-5	0.0			
5'							
		60/60	S-4 5-7	0.1	Light brown, FINE SAND, some clay and silt, wet		
			S-5 8-10	0.1			
10'							
		60/60	S-6 10-12	0.3	Light brown, FINE SAND, some clay and silt, wet		
			S-7 13-15	0.1			
15'							
					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-2

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-3

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Former gasoline UST	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		40/60	S-1 0-1	1.1	Top 5" Dark brown, COARSE SAND, trace gravel, moist Bottom 35" Light brown/gray, FINE SAND, trace gravel, moist		
			S-2 1-3	0.0			
			S-3 3-5	0.0			
5'							
		40/60	S-4 5-7	0.1	Top 6" Brown, COARSE SAND and GRAVEL, wet Bottom 34" Light gray, FINE SAND, wet		
			S-5 8-10	0.0			
10'							
					End of Exploration at 10'		
15'							
20'							
25'							

Remarks:

PROJECT NO. **2060-02-01**

LOG OF BORING **B-3**

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-4

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Proposed new Library	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		50/60	S-1 0-1	0.6	Top 10" Dark brown, FINE to MEDIUM SAND, some organic, moist Bottom 40" Light brown, FINE SAND, moist		
			S-2 1-3	0.0			
			S-3 3-5	0.0			
5'		60/60	S-4 5-7	0.1	Top 10" Light brown, MEDIUM to COARSE SAND, moist Bottom 60" Light brown, FINE SAND, some clay, wet		
			S-5 8-10	0.1			
10'		40/60	S-6 10-12	0.1	Top 20" Light brown, MEDIUM to COARSE SAND, wet Bottom 20" Light brown/gray, FINE SAND, some clay and silt, wet		
			S-7 13-15	0.1			
15'					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-4

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-5

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Proposed new Library	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		45/60	S-1 0-1	4.7	Top 7" Brown, ORGANICS, moist Next 5" Brown, MEDIUM SAND, moist Bottom 33" Brown/Light gray, FINE to COARSE SAND, moist		
			S-2 1-3	0.3			
			S-3 3-5	0.5			
5'		60/60	S-4 5-7	0.0	Top 20" Brown/Light gray, FINE to COARSE SAND, wet Bottom 40" Light gray, FINE SAND, some clay and silt, wet		
			S-5 8-10	0.0			
10'		30/60	S-6 10-12	0.0	Light gray, FINE SAND, some clay and silt, wet		
			S-7 13-15	0.0			
15'					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-5

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-6

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Proposed new leach field	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		45/60	S-1 0-1	0.0	Top 10" Brown, ORGANICS, moist Next 8" Brown, FINE to COARSE SAND, little silt, moist Bottom 27" Gray, MEDIUM to COARSE SAND, some clay and silt, wet		
			S-2 1-3	0.0			
			S-3 3-5	0.0			
5'							
		60/60	S-4 5-7	0.0	Top 10" Gray/brown, FINE to MEDIUM SAND, wet Bottom 50" Gray, FINE to MEDIUM SAND, some silt and clay, wet		
			S-5 8-10	0.0			
10'							
		60/60	S-6 10-12	0.0	Gray, FINE to MEDIUM SAND, some silt and clay, wet		
			S-7 13-15	0.0			
15'							
					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-6

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-7

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Former trash dump	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		40/60	S-1 0-1	6.8	Top 3" Brown, ORGANICS, moist Next 4" Brown, FINE to MEDIUM SAND, moist Bottom 33" Light brown/gray, FINE to COARSE SAND, wet		
			S-2 1-3	0.4			
			S-3 3-5	0.1			
5'							
		60/60	S-4 5-7	0.1	Top 15" Light brown/gray, FINE to COARSE SAND, wet Bottom 45" Light brown/gray, FINE to COARSE SAND, some clay and silt, wet		
			S-5 8-10	0.1			
10'							
		60/60	S-6 10-12	0.1	Top 20" Light Brown/gray, FINE to MEDIUM SAND, wet Bottom 40" Light brown/gray, FINE to COARSE SAND, some clay and silt, wet		
			S-7 13-15	0.1			
15'							
					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. **2060-02-01**

LOG OF BORING **B-7**

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-8

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Former trash dump	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		45/60	S-1 0-1	0.8	Top 15" Dark brown, MEDIUM SAND, some organics, moist Next 5" Brown, MEDIUM to COARSE SAND, moist Bottom 25" Light gray, FINE SAND, some silt and clay, moist		
			S-2 1-3	0.7			
			S-3 3-5	0.4			
5'		55/60	S-4 5-7	0.0	Light gray, FINE SAND, some silt and clay, moist, wet		
			S-5 8-10	0.0			
10'		50/60	S-6 10-12	0.0	Light gray, FINE SAND, some silt and clay, wet		
			S-7 13-15	0.0			
15'					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-8

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-9

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Former transformer pad	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		30/60	S-1 0-1	20.0	Top 3" Brown, MEDIUM to COARSE SAND, some gravel, trace organics, moist Bottom 27" Brown, FINE SAND, some clay and silt, moist		
			S-2 1-3	0.5			
			S-3 3-5	0.2			
5'		35/60	S-4 5-7	0.2	Brown, FINE SAND, some clay and silt		
			S-5 8-10	780			
10'		40/60	S-6 10-12	616	Brown, FINE SAND, some clay and silt, wet		
			S-7 13-15	247			
15'		60/60	S-8 15-17	2.4	Brown, FINE SAND, some clay and silt, wet		
			S-9 18-20	2.0			
20'					End of Exploration at 20'		
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-9

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING B-10

PROJECT	77 Leverett			CONTRACTOR	Martin Geo Environmental		
JOB NUMBER	2060-02-01	FINAL DEPTH (ft)		DRILLING EQUIPMENT	B-48 Track Mounted Rig		
LOCATION	Shutebury, MA	SURFACE ELEV (ft)		FOREMAN	Phil	CASING	
START DATE	9/16/2021	DISTURBED SAMPLES		HELPER	Adam	CASE DIAMETER	N/A
FINISH DATE	9/16/2021	UNDISTURBED SAMPLES		BIT TYPE	Direct Push	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Erica Escobar	WATER LEVEL		ROD TYPE	None	HAMMER DROP	N/A
BORING LOCATION	Area where car was abandoned	FIRST (ft)		SAMPLER	5' Dual Tube Liner	ROCK CORING INFORMATION	
		LAST (ft)		HAMMER TYPE	None	TYPE	N/A
		TIME (hr)		HAMMER WGT/DROP	N/A	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
		40/60	S-1 0-1	7.8	Top 10" ORGANICS Next 6" Brown/orange, FINE to MEDIUM SAND, some silt, moist Bottom 24" Light brown, FINE to MEDIUM SAND, some silt, wet		
			S-2 1-3	9.3			
			S-3 3-5	0.3			
5'							
		35/60	S-4 5-7	0.5	Light brown, FINE to MEDIUM SAND, some silt, trace boulders, wet		
			S-5 8-10	0.2			
10'							
		50/60	S-6 10-12	0.1	Top 10" Light brown/gray, MEDIUM to COARSE SAND, wet Bottom 40" Brown, FINE to MEDIUM SAND, some silt and clay, wet		
			S-7 13-15	0.2			
15'							
					End of Exploration at 15'		
20'							
25'							

Remarks:

PROJECT NO. 2060-02-01

LOG OF BORING B-10

APPENDIX D

September 23, 2021

Mark O'Malley
OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103

Project Location: Shutesbury, MA
Client Job Number:
Project Number: 2060-02-01
Laboratory Work Order Number: 21I0921

Enclosed are results of analyses for samples received by the laboratory on September 17, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103
ATTN: Mark O'Malley

REPORT DATE: 9/23/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2060-02-01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21I0921

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B-1 (5-7)	21I0921-01	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
				SW-846 8260C-D	
B-2 (1-3)	21I0921-02	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
B-3 (5-7)	21I0921-03	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
				SW-846 8260C-D	
B-4 (3-5)	21I0921-04	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
B-5 (5-7)	21I0921-05	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
				SW-846 8260C-D	
B-6 (3-5)	21I0921-06	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
B-7 (0-1)	21I0921-07	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
B-8 (1-3)	21I0921-08	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
B-9 (0-1)	21I0921-09	Soil		SM 2540G	
				SW-846 8082A	
B-9 (8-10)	21I0921-10	Soil		MADEP-VPH-Feb 2018 Rev 2.1	
				SM 2540G	
				SW-846 8082A	
				SW-846 8260C-D	
B-10 (1-3)	21I0921-11	Soil		MADEP EPH rev 2.1	
				SM 2540G	
				SW-846 8082A	
				SW-846 8260C-D	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Qualifications:

O-01

Soil/methanol ratio does not meet method specifications. Excess amount of soil. Sample was completely covered with methanol, but with less than the method-specified amount.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

S-15

Surrogate recovery outside of control limits due to suspected sample matrix interference. Chromatogram(s) is attached.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

SW-846 8082A

Qualifications:

O-32

A dilution was performed as part of the standard analytical procedure.

Analyte & Samples(s) Qualified:

21I0921-01[B-1 (5-7)], 21I0921-02[B-2 (1-3)], 21I0921-03[B-3 (5-7)], 21I0921-04[B-4 (3-5)], 21I0921-05[B-5 (5-7)], 21I0921-06[B-6 (3-5)], 21I0921-07[B-7 (0-1)], 21I0921-08[B-8 (1-3)], 21I0921-09[B-9 (0-1)], 21I0921-10[B-9 (8-10)], 21I0921-11[B-10 (1-3)]

SW-846 8260C-D

Qualifications:

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

Chloroethane
B290528-BS1

RL-05

Elevated reporting limit due to high concentration of target compounds. MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

Dichlorodifluoromethane (Freon 12
21I0921-01[B-1 (5-7)], 21I0921-03[B-3 (5-7)], 21I0921-05[B-5 (5-7)], 21I0921-11[B-10 (1-3)], B290543-BLK1, B290543-BS1, B290543-BSD1, S063414-CCV1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane
S063414-CCV1, S063445-CCV1

Tetrahydrofuran
S063414-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

Bromoform

B290528-BS1, B290528-BSD1, B290543-BS1, B290543-BSD1, S063414-CCV1, S063445-CCV1

Chloroethane

B290528-BS1, B290528-BSD1, S063445-CCV1

Dichlorodifluoromethane (Freon 12

B290528-BS1, B290528-BSD1, S063445-CCV1

Hexachlorobutadiene

B290543-BS1, B290543-BSD1, S063414-CCV1

V-34

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

Bromomethane

21I0921-10[B-9 (8-10)], B290528-BLK1, B290528-BS1, B290528-BSD1, S063445-CCV1

MADEP-VPH-Feb 2018 Rev 2.1

No significant modifications were made to the method. All VPH samples were received preserved properly in methanol with a soil/methanol ratio of 1:1 +/- 25% completely covered by methanol in the proper containers specified on the chain-of-custody form unless specified in this narrative.

Analytical column used for VPH analysis is Restek, Rtx-502.2, 105meter, 0.53mmID, 3um df. Trap used for VPH analysis is Carbopack B/CarboSieveS-III.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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 A. Worthington
Technical Representative

con-test® A Pace Analytical® Laboratory

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-1 (5-7) | Sampled: 9/16/2021 08:30

Sample ID: 21I0921-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Benzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Bromobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Bromochloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Bromodichloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Bromoform	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Bromomethane	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
2-Butanone (MEK)	ND	0.023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
n-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
sec-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
tert-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Carbon Disulfide	ND	0.0034	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Carbon Tetrachloride	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Chlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Chlorodibromomethane	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Chloroethane	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Chloroform	ND	0.0023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Chloromethane	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
2-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
4-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2-Dibromoethane (EDB)	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Dibromomethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,3-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,4-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.0057	mg/Kg dry	1	V-05	SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1-Dichloroethylene	ND	0.0023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
cis-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
trans-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,3-Dichloropropane	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
2,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1-Dichloropropene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
cis-1,3-Dichloropropene	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
trans-1,3-Dichloropropene	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Diethyl Ether	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Diisopropyl Ether (DIPE)	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,4-Dioxane	ND	0.057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Ethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-1 (5-7) | Sampled: 9/16/2021 08:30

Sample ID: 21I0921-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
2-Hexanone (MBK)	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Isopropylbenzene (Cumene)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Methylene Chloride	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Naphthalene	ND	0.0023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
n-Propylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Styrene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1,1,2-Tetrachloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1,2,2-Tetrachloroethane	ND	0.00057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Tetrachloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Tetrahydrofuran	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Toluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2,3-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2,4-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1,1-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,1,2-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Trichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2,3-Trichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,2,4-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
1,3,5-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
Vinyl Chloride	ND	0.0057	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
m+p Xylene	ND	0.0023	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF
o-Xylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:02	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.2	70-130		9/20/21 10:02
Toluene-d8	98.4	70-130		9/20/21 10:02
4-Bromofluorobenzene	94.6	70-130		9/20/21 10:02

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-1 (5-7) | Sampled: 9/16/2021 08:30

Sample ID: 21I0921-01

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1221 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1232 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1242 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1248 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1254 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1260 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1262 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG
Aroclor-1268 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 10:52	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	97.9	30-150		9/22/21 10:52
Decachlorobiphenyl [2]	89.9	30-150		9/22/21 10:52
Tetrachloro-m-xylene [1]	82.0	30-150		9/22/21 10:52
Tetrachloro-m-xylene [2]	83.4	30-150		9/22/21 10:52

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-1 (5-7) | Sampled: 9/16/2021 08:30

Sample ID: 21I0921-01

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 14:40	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	69.6	40-140		9/22/21 14:40
o-Terphenyl (OTP)	67.3	40-140		9/22/21 14:40
2-Bromonaphthalene	80.7	40-140		9/22/21 14:40
2-Fluorobiphenyl	79.5	40-140		9/22/21 14:40

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-1 (5-7) Sampled: 9/16/2021 08:30

Sample ID: 21I0921-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-2 (1-3) | Sampled: 9/16/2021 09:00

Sample ID: 21I0921-02

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1221 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1232 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1242 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1248 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1254 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1260 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1262 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG
Aroclor-1268 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:09	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	96.4	30-150		9/22/21 11:09
Decachlorobiphenyl [2]	88.9	30-150		9/22/21 11:09
Tetrachloro-m-xylene [1]	81.6	30-150		9/22/21 11:09
Tetrachloro-m-xylene [2]	83.0	30-150		9/22/21 11:09

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-2 (1-3) | Sampled: 9/16/2021 09:00

Sample ID: 21I0921-02

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:07	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	59.6	40-140		9/22/21 11:07
o-Terphenyl (OTP)	56.6	40-140		9/22/21 11:07
2-Bromonaphthalene	80.0	40-140		9/22/21 11:07
2-Fluorobiphenyl	81.5	40-140		9/22/21 11:07

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Project Location: Shutesbury, MA
Sample Description:
Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-2 (1-3)
Sampled: 9/16/2021 09:00

Sample ID: 21I0921-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.7		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-3 (5-7) | Sampled: 9/16/2021 09:30

Sample ID: 21I0921-03

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Benzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Bromobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Bromochloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Bromodichloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Bromoform	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Bromomethane	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
2-Butanone (MEK)	ND	0.021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
n-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
sec-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
tert-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Carbon Disulfide	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Carbon Tetrachloride	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Chlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Chlorodibromomethane	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Chloroethane	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Chloroform	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Chloromethane	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
2-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
4-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2-Dibromoethane (EDB)	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Dibromomethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,3-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,4-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.0053	mg/Kg dry	1	V-05	SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1-Dichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
cis-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
trans-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,3-Dichloropropane	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
2,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1-Dichloropropene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
cis-1,3-Dichloropropene	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
trans-1,3-Dichloropropene	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Diethyl Ether	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Diisopropyl Ether (DIPE)	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,4-Dioxane	ND	0.053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Ethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-3 (5-7) | Sampled: 9/16/2021 09:30

Sample ID: 21I0921-03

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
2-Hexanone (MBK)	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Isopropylbenzene (Cumene)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Methylene Chloride	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Naphthalene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
n-Propylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Styrene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1,1,2-Tetrachloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1,2,2-Tetrachloroethane	ND	0.00053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Tetrachloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Tetrahydrofuran	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Toluene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2,3-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2,4-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1,1-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,1,2-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Trichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2,3-Trichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,2,4-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
1,3,5-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
Vinyl Chloride	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
m+p Xylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF
o-Xylene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:30	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	94.3	70-130		9/20/21 10:30
Toluene-d8	97.2	70-130		9/20/21 10:30
4-Bromofluorobenzene	97.6	70-130		9/20/21 10:30

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-3 (5-7) | Sampled: 9/16/2021 09:30

Sample ID: 21I0921-03

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1221 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1232 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1242 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1248 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1254 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1260 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1262 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG
Aroclor-1268 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:27	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	90.5	30-150		9/22/21 11:27
Decachlorobiphenyl [2]	83.7	30-150		9/22/21 11:27
Tetrachloro-m-xylene [1]	75.3	30-150		9/22/21 11:27
Tetrachloro-m-xylene [2]	77.3	30-150		9/22/21 11:27

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-3 (5-7) | Sampled: 9/16/2021 09:30

Sample ID: 21I0921-03

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:26	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	57.5	40-140		9/22/21 11:26
o-Terphenyl (OTP)	59.0	40-140		9/22/21 11:26
2-Bromonaphthalene	83.6	40-140		9/22/21 11:26
2-Fluorobiphenyl	84.8	40-140		9/22/21 11:26

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-3 (5-7) Sampled: 9/16/2021 09:30

Sample ID: 21I0921-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.2		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-4 (3-5) | Sampled: 9/16/2021 10:00

Sample ID: 21I0921-04

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1221 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1232 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1242 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1248 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1254 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1260 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1262 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG
Aroclor-1268 [1]	ND	0.089	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:39	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	84.5	30-150		9/22/21 11:39
Decachlorobiphenyl [2]	78.6	30-150		9/22/21 11:39
Tetrachloro-m-xylene [1]	71.6	30-150		9/22/21 11:39
Tetrachloro-m-xylene [2]	73.1	30-150		9/22/21 11:39

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-4 (3-5) | Sampled: 9/16/2021 10:00

Sample ID: 21I0921-04

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 11:45	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	57.4	40-140		9/22/21 11:45
o-Terphenyl (OTP)	59.5	40-140		9/22/21 11:45
2-Bromonaphthalene	73.6	40-140		9/22/21 11:45
2-Fluorobiphenyl	77.1	40-140		9/22/21 11:45

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-4 (3-5) Sampled: 9/16/2021 10:00

Sample ID: 21I0921-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.8		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-5 (5-7) | Sampled: 9/16/2021 10:30

Sample ID: 21I0921-05

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.10	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Benzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Bromobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Bromochloromethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Bromodichloromethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Bromoform	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Bromomethane	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
2-Butanone (MEK)	ND	0.041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
n-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
sec-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
tert-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Carbon Disulfide	ND	0.0062	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Carbon Tetrachloride	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Chlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Chlorodibromomethane	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Chloroethane	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Chloroform	ND	0.0041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Chloromethane	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
2-Chlorotoluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
4-Chlorotoluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Dibromomethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,3-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,4-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.010	mg/Kg dry	1	V-05	SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1-Dichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2-Dichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1-Dichloroethylene	ND	0.0041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
cis-1,2-Dichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
trans-1,2-Dichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2-Dichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,3-Dichloropropane	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
2,2-Dichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1-Dichloropropene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Diethyl Ether	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,4-Dioxane	ND	0.10	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Ethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-5 (5-7) | Sampled: 9/16/2021 10:30

Sample ID: 21I0921-05

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
2-Hexanone (MBK)	ND	0.021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Isopropylbenzene (Cumene)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Methylene Chloride	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Naphthalene	ND	0.0041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
n-Propylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Styrene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1,1,2-Tetrachloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Tetrachloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Tetrahydrofuran	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Toluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2,3-Trichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2,4-Trichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1,1-Trichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,1,2-Trichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Trichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2,3-Trichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,2,4-Trimethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
1,3,5-Trimethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
Vinyl Chloride	ND	0.010	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
m+p Xylene	ND	0.0041	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF
o-Xylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 10:59	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	97.9	70-130		9/20/21 10:59
Toluene-d8	98.7	70-130		9/20/21 10:59
4-Bromofluorobenzene	98.0	70-130		9/20/21 10:59

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-5 (5-7) | Sampled: 9/16/2021 10:30

Sample ID: 21I0921-05

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1221 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1232 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1242 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1248 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1254 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1260 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1262 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG
Aroclor-1268 [1]	ND	0.091	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 11:52	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	85.1	30-150		9/22/21 11:52
Decachlorobiphenyl [2]	79.0	30-150		9/22/21 11:52
Tetrachloro-m-xylene [1]	75.2	30-150		9/22/21 11:52
Tetrachloro-m-xylene [2]	77.2	30-150		9/22/21 11:52

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-5 (5-7) | Sampled: 9/16/2021 10:30

Sample ID: 21I0921-05

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:05	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	60.9	40-140		9/22/21 12:05
o-Terphenyl (OTP)	60.1	40-140		9/22/21 12:05
2-Bromonaphthalene	75.8	40-140		9/22/21 12:05
2-Fluorobiphenyl	78.7	40-140		9/22/21 12:05

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-5 (5-7) Sampled: 9/16/2021 10:30

Sample ID: 21I0921-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.3		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-6 (3-5) | Sampled: 9/16/2021 11:00

Sample ID: 21I0921-06

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1221 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1232 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1242 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1248 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1254 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1260 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1262 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG
Aroclor-1268 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:04	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	84.3	30-150		9/22/21 12:04
Decachlorobiphenyl [2]	78.9	30-150		9/22/21 12:04
Tetrachloro-m-xylene [1]	74.0	30-150		9/22/21 12:04
Tetrachloro-m-xylene [2]	75.7	30-150		9/22/21 12:04

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-6 (3-5) | Sampled: 9/16/2021 11:00

Sample ID: 21I0921-06

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:24	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	53.8	40-140		9/22/21 12:24
o-Terphenyl (OTP)	55.1	40-140		9/22/21 12:24
2-Bromonaphthalene	71.0	40-140		9/22/21 12:24
2-Fluorobiphenyl	71.7	40-140		9/22/21 12:24

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-6 (3-5) Sampled: 9/16/2021 11:00

Sample ID: 21I0921-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.9		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-7 (0-1) | Sampled: 9/16/2021 11:30

Sample ID: 21I0921-07

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1221 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1232 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1242 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1248 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1254 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1260 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1262 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG
Aroclor-1268 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:16	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	99.2	30-150		9/22/21 12:16
Decachlorobiphenyl [2]	92.3	30-150		9/22/21 12:16
Tetrachloro-m-xylene [1]	82.4	30-150		9/22/21 12:16
Tetrachloro-m-xylene [2]	84.0	30-150		9/22/21 12:16

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-7 (0-1) | Sampled: 9/16/2021 11:30

Sample ID: 21I0921-07

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
C19-C36 Aliphatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Unadjusted C11-C22 Aromatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
C11-C22 Aromatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Acenaphthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Acenaphthylene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Benzo(a)anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Benzo(a)pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Benzo(b)fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Benzo(g,h,i)perylene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Benzo(k)fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Chrysene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Dibenz(a,h)anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Fluorene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Indeno(1,2,3-cd)pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
2-Methylnaphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Naphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Phenanthrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD
Pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 12:44	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	61.3	40-140		9/22/21 12:44
o-Terphenyl (OTP)	55.9	40-140		9/22/21 12:44
2-Bromonaphthalene	69.8	40-140		9/22/21 12:44
2-Fluorobiphenyl	72.4	40-140		9/22/21 12:44

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-7 (0-1) | Sampled: 9/16/2021 11:30

Sample ID: 21I0921-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	83.9		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-8 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-08

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1221 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1232 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1242 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1248 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1254 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1260 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1262 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG
Aroclor-1268 [1]	ND	0.092	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:29	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	89.5	30-150		9/22/21 12:29
Decachlorobiphenyl [2]	83.5	30-150		9/22/21 12:29
Tetrachloro-m-xylene [1]	74.2	30-150		9/22/21 12:29
Tetrachloro-m-xylene [2]	75.7	30-150		9/22/21 12:29

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-8 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-08

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
C19-C36 Aliphatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Unadjusted C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
C11-C22 Aromatics	ND	11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Benzo(a)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Benzo(a)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Benzo(b)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Benzo(g,h,i)perylene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Benzo(k)fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Chrysene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Fluoranthene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Fluorene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Indeno(1,2,3-cd)pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Phenanthrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD
Pyrene	ND	0.11	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:03	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	49.5	40-140		9/22/21 13:03
o-Terphenyl (OTP)	50.6	40-140		9/22/21 13:03
2-Bromonaphthalene	76.8	40-140		9/22/21 13:03
2-Fluorobiphenyl	76.7	40-140		9/22/21 13:03

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Project Location: Shutesbury, MA Sample Description: Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-8 (1-3) Sampled: 9/16/2021 12:00

Sample ID: 21I0921-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.2		% Wt	1		SM 2540G	9/21/21	9/22/21 17:28	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (0-1) | Sampled: 9/16/2021 12:30

Sample ID: 21I0921-09

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1254 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:42	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	89.6	30-150		9/22/21 12:42
Decachlorobiphenyl [2]	83.2	30-150		9/22/21 12:42
Tetrachloro-m-xylene [1]	78.7	30-150		9/22/21 12:42
Tetrachloro-m-xylene [2]	80.1	30-150		9/22/21 12:42

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (0-1) | Sampled: 9/16/2021 12:30

Sample ID: 21I0921-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	78.1		% Wt	1		SM 2540G	9/21/21	9/22/21 17:29	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Sample Flags: RL-05

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	8.5	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Benzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Bromobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Bromochloromethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Bromodichloromethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Bromoform	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Bromomethane	ND	0.34	mg/Kg dry	4	V-34	SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
2-Butanone (MEK)	ND	3.4	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
n-Butylbenzene	1.2	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
sec-Butylbenzene	0.28	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
tert-Butylbenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Carbon Disulfide	ND	1.7	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Carbon Tetrachloride	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Chlorobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Chlorodibromomethane	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Chloroethane	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Chloroform	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Chloromethane	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
2-Chlorotoluene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
4-Chlorotoluene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.68	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2-Dibromoethane (EDB)	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Dibromomethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2-Dichlorobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,3-Dichlorobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,4-Dichlorobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1-Dichloroethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2-Dichloroethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1-Dichloroethylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
cis-1,2-Dichloroethylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
trans-1,2-Dichloroethylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2-Dichloropropane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,3-Dichloropropane	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
2,2-Dichloropropane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1-Dichloropropene	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
cis-1,3-Dichloropropene	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
trans-1,3-Dichloropropene	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Diethyl Ether	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Diisopropyl Ether (DIPE)	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,4-Dioxane	ND	8.5	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Ethylbenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Sample Flags: RL-05

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
2-Hexanone (MBK)	ND	1.7	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Isopropylbenzene (Cumene)	0.25	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Methylene Chloride	ND	0.85	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
4-Methyl-2-pentanone (MIBK)	ND	1.7	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Naphthalene	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
n-Propylbenzene	1.6	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Styrene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1,1,2-Tetrachloroethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1,2,2-Tetrachloroethane	ND	0.085	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Tetrachloroethylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Tetrahydrofuran	ND	0.68	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Toluene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2,3-Trichlorobenzene	ND	0.68	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2,4-Trichlorobenzene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1,1-Trichloroethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,1,2-Trichloroethane	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Trichloroethylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Trichlorofluoromethane (Freon 11)	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2,3-Trichloropropane	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,2,4-Trimethylbenzene	2.1	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
1,3,5-Trimethylbenzene	3.2	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
Vinyl Chloride	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
m+p Xylene	ND	0.34	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH
o-Xylene	ND	0.17	mg/Kg dry	4		SW-846 8260C-D	9/20/21	9/20/21 14:51	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,2-Dichloroethane-d4	100	70-130		9/20/21	14:51
Toluene-d8	96.7	70-130		9/20/21	14:51
4-Bromofluorobenzene	101	70-130		9/20/21	14:51

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1221 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1232 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1242 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1248 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1254 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1260 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1262 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG
Aroclor-1268 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 12:54	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	75.9	30-150		9/22/21 12:54
Decachlorobiphenyl [2]	70.7	30-150		9/22/21 12:54
Tetrachloro-m-xylene [1]	61.8	30-150		9/22/21 12:54
Tetrachloro-m-xylene [2]	63.4	30-150		9/22/21 12:54

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Sample Flags: O-01, S-15

Soil/Methanol Preservation Ratio: 1.48

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	100	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C5-C8 Aliphatics	100	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Unadjusted C9-C12 Aliphatics	160	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C9-C12 Aliphatics	89	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C9-C10 Aromatics	66	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Benzene	0.30	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Ethylbenzene	0.18	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Methyl tert-Butyl Ether (MTBE)	ND	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Naphthalene	0.54	0.42	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Toluene	ND	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
m+p Xylene	0.28	0.17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
o-Xylene	0.20	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB

Surrogates	% Recovery		Recovery Limits	Flag/Qual		
2,5-Dibromotoluene (FID)	**136**	*	70-130		9/21/21	19:10
2,5-Dibromotoluene (PID)	**131**	*	70-130		9/21/21	19:10

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.8		% Wt	1		SM 2540G	9/21/21	9/22/21 17:29	CV

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-10 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-11

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.11	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Benzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Bromobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Bromochloromethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Bromodichloromethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Bromoform	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Bromomethane	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
2-Butanone (MEK)	ND	0.042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
n-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
sec-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
tert-Butylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Carbon Disulfide	ND	0.0064	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Carbon Tetrachloride	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Chlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Chlorodibromomethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Chloroethane	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Chloroform	ND	0.0042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Chloromethane	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
2-Chlorotoluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
4-Chlorotoluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2-Dibromoethane (EDB)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Dibromomethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,3-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,4-Dichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.011	mg/Kg dry	1	V-05	SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1-Dichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2-Dichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1-Dichloroethylene	ND	0.0042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
cis-1,2-Dichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
trans-1,2-Dichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2-Dichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,3-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
2,2-Dichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1-Dichloropropene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
cis-1,3-Dichloropropene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
trans-1,3-Dichloropropene	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Diethyl Ether	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Diisopropyl Ether (DIPE)	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,4-Dioxane	ND	0.11	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Ethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-10 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-11

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
2-Hexanone (MBK)	ND	0.021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Isopropylbenzene (Cumene)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Methylene Chloride	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Naphthalene	ND	0.0042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
n-Propylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Styrene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1,1,2-Tetrachloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1,2,2-Tetrachloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Tetrachloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Tetrahydrofuran	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Toluene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2,3-Trichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2,4-Trichlorobenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1,1-Trichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,1,2-Trichloroethane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Trichloroethylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Trichlorofluoromethane (Freon 11)	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2,3-Trichloropropane	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,2,4-Trimethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
1,3,5-Trimethylbenzene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
Vinyl Chloride	ND	0.011	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
m+p Xylene	ND	0.0042	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF
o-Xylene	ND	0.0021	mg/Kg dry	1		SW-846 8260C-D	9/20/21	9/20/21 11:27	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.6	70-130		9/20/21 11:27
Toluene-d8	98.4	70-130		9/20/21 11:27
4-Bromofluorobenzene	96.6	70-130		9/20/21 11:27

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-10 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-11

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1221 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1232 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1242 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1248 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1254 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1260 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1262 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG
Aroclor-1268 [1]	ND	0.096	mg/Kg dry	4		SW-846 8082A	9/17/21	9/22/21 13:07	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	104	30-150		9/22/21 13:07
Decachlorobiphenyl [2]	96.0	30-150		9/22/21 13:07
Tetrachloro-m-xylene [1]	90.8	30-150		9/22/21 13:07
Tetrachloro-m-xylene [2]	92.2	30-150		9/22/21 13:07

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-10 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-11

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
C19-C36 Aliphatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Unadjusted C11-C22 Aromatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
C11-C22 Aromatics	ND	12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Acenaphthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Acenaphthylene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Benzo(a)anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Benzo(a)pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Benzo(b)fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Benzo(g,h,i)perylene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Benzo(k)fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Chrysene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Dibenz(a,h)anthracene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Fluoranthene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Fluorene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Indeno(1,2,3-cd)pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
2-Methylnaphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Naphthalene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Phenanthrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD
Pyrene	ND	0.12	mg/Kg dry	1		MADEP EPH rev 2.1	9/18/21	9/22/21 13:23	RDD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	56.9	40-140		9/22/21 13:23
o-Terphenyl (OTP)	59.1	40-140		9/22/21 13:23
2-Bromonaphthalene	91.8	40-140		9/22/21 13:23
2-Fluorobiphenyl	94.7	40-140		9/22/21 13:23

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-10 (1-3) | Sampled: 9/16/2021 12:00

Sample ID: 21I0921-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	83.2		% Wt	1		SM 2540G	9/21/21	9/22/21 17:29	CV

Sample Extraction Data

Prep Method: SW-846 3546 **Analytical Method: MADEP EPH rev 2.1**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
21I0921-01 [B-1 (5-7)]	B290504	20.3	2.00	09/18/21
21I0921-02 [B-2 (1-3)]	B290504	20.3	2.00	09/18/21
21I0921-03 [B-3 (5-7)]	B290504	20.0	2.00	09/18/21
21I0921-04 [B-4 (3-5)]	B290504	20.4	2.00	09/18/21
21I0921-05 [B-5 (5-7)]	B290504	20.0	2.00	09/18/21
21I0921-06 [B-6 (3-5)]	B290504	20.1	2.00	09/18/21
21I0921-07 [B-7 (0-1)]	B290504	20.4	2.00	09/18/21
21I0921-08 [B-8 (1-3)]	B290504	20.1	2.00	09/18/21
21I0921-11 [B-10 (1-3)]	B290504	20.2	2.00	09/18/21

Prep Method: MA VPH **Analytical Method: MADEP-VPH-Feb 2018 Rev 2.1**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
21I0921-10 [B-9 (8-10)]	B290675	22.2	17.0	09/21/21

Prep Method: % Solids **Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
21I0921-01 [B-1 (5-7)]	B290709	09/21/21
21I0921-02 [B-2 (1-3)]	B290709	09/21/21
21I0921-03 [B-3 (5-7)]	B290709	09/21/21
21I0921-04 [B-4 (3-5)]	B290709	09/21/21
21I0921-05 [B-5 (5-7)]	B290709	09/21/21
21I0921-06 [B-6 (3-5)]	B290709	09/21/21
21I0921-07 [B-7 (0-1)]	B290709	09/21/21
21I0921-08 [B-8 (1-3)]	B290709	09/21/21
21I0921-09 [B-9 (0-1)]	B290709	09/21/21
21I0921-10 [B-9 (8-10)]	B290709	09/21/21
21I0921-11 [B-10 (1-3)]	B290709	09/21/21

Prep Method: SW-846 3546 **Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
21I0921-01 [B-1 (5-7)]	B290486	10.0	10.0	09/17/21
21I0921-02 [B-2 (1-3)]	B290486	10.0	10.0	09/17/21
21I0921-03 [B-3 (5-7)]	B290486	10.0	10.0	09/17/21
21I0921-04 [B-4 (3-5)]	B290486	10.0	10.0	09/17/21
21I0921-05 [B-5 (5-7)]	B290486	10.0	10.0	09/17/21
21I0921-06 [B-6 (3-5)]	B290486	10.0	10.0	09/17/21
21I0921-07 [B-7 (0-1)]	B290486	10.0	10.0	09/17/21
21I0921-08 [B-8 (1-3)]	B290486	10.0	10.0	09/17/21
21I0921-09 [B-9 (0-1)]	B290486	10.0	10.0	09/17/21
21I0921-10 [B-9 (8-10)]	B290486	10.0	10.0	09/17/21
21I0921-11 [B-10 (1-3)]	B290486	10.0	10.0	09/17/21

Prep Method: SW-846 5035 **Analytical Method: SW-846 8260C-D**

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
21I0921-10 [B-9 (8-10)]	B290528	22.2	17.0	0.25	50	09/20/21

Sample Extraction Data

Prep Method: SW-846 5035 **Analytical Method: SW-846 8260C-D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
21I0921-01 [B-1 (5-7)]	B290543	9.80	10.0	09/20/21
21I0921-03 [B-3 (5-7)]	B290543	10.7	10.0	09/20/21
21I0921-05 [B-5 (5-7)]	B290543	5.52	10.0	09/20/21
21I0921-11 [B-10 (1-3)]	B290543	5.67	10.0	09/20/21

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290528 - SW-846 5035										
Blank (B290528-BLK1)				Prepared & Analyzed: 09/20/21						
Acetone	ND	2.5	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.025	mg/Kg wet							
Benzene	ND	0.050	mg/Kg wet							
Bromobenzene	ND	0.050	mg/Kg wet							
Bromochloromethane	ND	0.050	mg/Kg wet							
Bromodichloromethane	ND	0.050	mg/Kg wet							
Bromoform	ND	0.050	mg/Kg wet							
Bromomethane	ND	0.10	mg/Kg wet							V-34
2-Butanone (MEK)	ND	1.0	mg/Kg wet							
n-Butylbenzene	ND	0.050	mg/Kg wet							
sec-Butylbenzene	ND	0.050	mg/Kg wet							
tert-Butylbenzene	ND	0.050	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.025	mg/Kg wet							
Carbon Disulfide	ND	0.50	mg/Kg wet							
Carbon Tetrachloride	ND	0.050	mg/Kg wet							
Chlorobenzene	ND	0.050	mg/Kg wet							
Chlorodibromomethane	ND	0.025	mg/Kg wet							
Chloroethane	ND	0.10	mg/Kg wet							
Chloroform	ND	0.10	mg/Kg wet							
Chloromethane	ND	0.10	mg/Kg wet							
2-Chlorotoluene	ND	0.050	mg/Kg wet							
4-Chlorotoluene	ND	0.050	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.20	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.025	mg/Kg wet							
Dibromomethane	ND	0.050	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.050	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.050	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.050	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.10	mg/Kg wet							
1,1-Dichloroethane	ND	0.050	mg/Kg wet							
1,2-Dichloroethane	ND	0.050	mg/Kg wet							
1,1-Dichloroethylene	ND	0.050	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.050	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.050	mg/Kg wet							
1,2-Dichloropropane	ND	0.050	mg/Kg wet							
1,3-Dichloropropane	ND	0.025	mg/Kg wet							
2,2-Dichloropropane	ND	0.050	mg/Kg wet							
1,1-Dichloropropene	ND	0.10	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.025	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.025	mg/Kg wet							
Diethyl Ether	ND	0.10	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.025	mg/Kg wet							
1,4-Dioxane	ND	2.5	mg/Kg wet							
Ethylbenzene	ND	0.050	mg/Kg wet							
Hexachlorobutadiene	ND	0.050	mg/Kg wet							
2-Hexanone (MBK)	ND	0.50	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.050	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.050	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg wet							
Methylene Chloride	ND	0.25	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.50	mg/Kg wet							
Naphthalene	ND	0.10	mg/Kg wet							

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B290528 - SW-846 5035												
Blank (B290528-BLK1)				Prepared & Analyzed: 09/20/21								
n-Propylbenzene	ND	0.050	mg/Kg wet									
Styrene	ND	0.050	mg/Kg wet									
1,1,1,2-Tetrachloroethane	ND	0.050	mg/Kg wet									
1,1,2,2-Tetrachloroethane	ND	0.025	mg/Kg wet									
Tetrachloroethylene	ND	0.050	mg/Kg wet									
Tetrahydrofuran	ND	0.20	mg/Kg wet									
Toluene	ND	0.050	mg/Kg wet									
1,2,3-Trichlorobenzene	ND	0.20	mg/Kg wet									
1,2,4-Trichlorobenzene	ND	0.050	mg/Kg wet									
1,1,1-Trichloroethane	ND	0.050	mg/Kg wet									
1,1,2-Trichloroethane	ND	0.050	mg/Kg wet									
Trichloroethylene	ND	0.050	mg/Kg wet									
Trichlorofluoromethane (Freon 11)	ND	0.10	mg/Kg wet									
1,2,3-Trichloropropane	ND	0.10	mg/Kg wet									
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg wet									
1,3,5-Trimethylbenzene	ND	0.050	mg/Kg wet									
Vinyl Chloride	ND	0.10	mg/Kg wet									
m+p Xylene	ND	0.10	mg/Kg wet									
o-Xylene	ND	0.050	mg/Kg wet									
Surrogate: 1,2-Dichloroethane-d4	*0.0257*		mg/Kg wet	0.0250		103		70-130				
Surrogate: Toluene-d8	*0.0242*		mg/Kg wet	0.0250		96.8		70-130				
Surrogate: 4-Bromofluorobenzene	*0.0237*		mg/Kg wet	0.0250		94.8		70-130				
LCS (B290528-BS1)				Prepared & Analyzed: 09/20/21								
Acetone	0.116	0.057	mg/Kg wet	0.113		103		40-160				†
tert-Amyl Methyl Ether (TAME)	0.0117	0.00057	mg/Kg wet	0.0113		104		70-130				
Benzene	0.0110	0.0011	mg/Kg wet	0.0113		97.4		70-130				
Bromobenzene	0.0121	0.0011	mg/Kg wet	0.0113		106		70-130				
Bromochloromethane	0.0135	0.0011	mg/Kg wet	0.0113		120		70-130				
Bromodichloromethane	0.0128	0.0011	mg/Kg wet	0.0113		113		70-130				
Bromoform	0.0143	0.0011	mg/Kg wet	0.0113		126		70-130			V-20	
Bromomethane	0.0117	0.0023	mg/Kg wet	0.0113		103		40-160			V-34	†
2-Butanone (MEK)	0.117	0.023	mg/Kg wet	0.113		104		40-160				†
n-Butylbenzene	0.0103	0.0011	mg/Kg wet	0.0113		90.6		70-130				
sec-Butylbenzene	0.0104	0.0011	mg/Kg wet	0.0113		91.6		70-130				
tert-Butylbenzene	0.0104	0.0011	mg/Kg wet	0.0113		91.4		70-130				
tert-Butyl Ethyl Ether (TBEE)	0.0124	0.00057	mg/Kg wet	0.0113		109		70-130				
Carbon Disulfide	0.121	0.011	mg/Kg wet	0.113		107		70-130				
Carbon Tetrachloride	0.0122	0.0011	mg/Kg wet	0.0113		108		70-130				
Chlorobenzene	0.0122	0.0011	mg/Kg wet	0.0113		107		70-130				
Chlorodibromomethane	0.0133	0.00057	mg/Kg wet	0.0113		117		70-130				
Chloroethane	0.0154	0.0023	mg/Kg wet	0.0113		**136**	*	70-130			L-07, V-20	
Chloroform	0.0120	0.0023	mg/Kg wet	0.0113		106		70-130				
Chloromethane	0.0113	0.0023	mg/Kg wet	0.0113		99.6		40-160				†
2-Chlorotoluene	0.0106	0.0011	mg/Kg wet	0.0113		93.8		70-130				
4-Chlorotoluene	0.0117	0.0011	mg/Kg wet	0.0113		103		70-130				
1,2-Dibromo-3-chloropropane (DBCP)	0.0107	0.0045	mg/Kg wet	0.0113		94.2		70-130				
1,2-Dibromoethane (EDB)	0.0126	0.00057	mg/Kg wet	0.0113		111		70-130				
Dibromomethane	0.0134	0.0011	mg/Kg wet	0.0113		118		70-130				
1,2-Dichlorobenzene	0.0119	0.0011	mg/Kg wet	0.0113		105		70-130				
1,3-Dichlorobenzene	0.0116	0.0011	mg/Kg wet	0.0113		103		70-130				
1,4-Dichlorobenzene	0.0118	0.0011	mg/Kg wet	0.0113		104		70-130				

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B290528 - SW-846 5035											
LCS (B290528-BS1)				Prepared & Analyzed: 09/20/21							
Dichlorodifluoromethane (Freon 12)	0.0137	0.0023	mg/Kg wet	0.0113		121	40-160			V-20	†
1,1-Dichloroethane	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130				
1,2-Dichloroethane	0.0122	0.0011	mg/Kg wet	0.0113		107	70-130				
1,1-Dichloroethylene	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130				
cis-1,2-Dichloroethylene	0.0121	0.0011	mg/Kg wet	0.0113		106	70-130				
trans-1,2-Dichloroethylene	0.0105	0.0011	mg/Kg wet	0.0113		93.0	70-130				
1,2-Dichloropropane	0.0124	0.0011	mg/Kg wet	0.0113		109	70-130				
1,3-Dichloropropane	0.0125	0.00057	mg/Kg wet	0.0113		110	70-130				
2,2-Dichloropropane	0.0127	0.0011	mg/Kg wet	0.0113		112	70-130				
1,1-Dichloropropene	0.0113	0.0023	mg/Kg wet	0.0113		100	70-130				
cis-1,3-Dichloropropene	0.0121	0.00057	mg/Kg wet	0.0113		107	70-130				
trans-1,3-Dichloropropene	0.0126	0.00057	mg/Kg wet	0.0113		111	70-130				
Diethyl Ether	0.0124	0.0023	mg/Kg wet	0.0113		109	70-130				
Diisopropyl Ether (DIPE)	0.0121	0.00057	mg/Kg wet	0.0113		106	70-130				
1,4-Dioxane	0.113	0.057	mg/Kg wet	0.113		99.5	40-160				†
Ethylbenzene	0.0115	0.0011	mg/Kg wet	0.0113		102	70-130				
Hexachlorobutadiene	0.0113	0.0011	mg/Kg wet	0.0113		99.8	70-130				
2-Hexanone (MBK)	0.123	0.011	mg/Kg wet	0.113		108	40-160				†
Isopropylbenzene (Cumene)	0.0115	0.0011	mg/Kg wet	0.0113		101	70-130				
p-Isopropyltoluene (p-Cymene)	0.0106	0.0011	mg/Kg wet	0.0113		93.2	70-130				
Methyl tert-Butyl Ether (MTBE)	0.0121	0.0011	mg/Kg wet	0.0113		106	70-130				
Methylene Chloride	0.0136	0.0057	mg/Kg wet	0.0113		120	70-130				
4-Methyl-2-pentanone (MIBK)	0.125	0.011	mg/Kg wet	0.113		110	40-160				†
Naphthalene	0.00898	0.0023	mg/Kg wet	0.0113		79.2	70-130				
n-Propylbenzene	0.0111	0.0011	mg/Kg wet	0.0113		98.2	70-130				
Styrene	0.0117	0.0011	mg/Kg wet	0.0113		104	70-130				
1,1,1,2-Tetrachloroethane	0.0133	0.0011	mg/Kg wet	0.0113		117	70-130				
1,1,2,2-Tetrachloroethane	0.0129	0.00057	mg/Kg wet	0.0113		114	70-130				
Tetrachloroethylene	0.0124	0.0011	mg/Kg wet	0.0113		110	70-130				
Tetrahydrofuran	0.0115	0.0045	mg/Kg wet	0.0113		101	70-130				
Toluene	0.0114	0.0011	mg/Kg wet	0.0113		101	70-130				
1,2,3-Trichlorobenzene	0.00989	0.0045	mg/Kg wet	0.0113		87.3	70-130				
1,2,4-Trichlorobenzene	0.0101	0.0011	mg/Kg wet	0.0113		88.8	70-130				
1,1,1-Trichloroethane	0.0119	0.0011	mg/Kg wet	0.0113		105	70-130				
1,1,2-Trichloroethane	0.0126	0.0011	mg/Kg wet	0.0113		111	70-130				
Trichloroethylene	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130				
Trichlorofluoromethane (Freon 11)	0.0128	0.0023	mg/Kg wet	0.0113		113	70-130				
1,2,3-Trichloropropane	0.0129	0.0023	mg/Kg wet	0.0113		114	70-130				
1,2,4-Trimethylbenzene	0.0107	0.0011	mg/Kg wet	0.0113		94.3	70-130				
1,3,5-Trimethylbenzene	0.0111	0.0011	mg/Kg wet	0.0113		97.9	70-130				
Vinyl Chloride	0.0106	0.0023	mg/Kg wet	0.0113		93.9	70-130				
m+p Xylene	0.0233	0.0023	mg/Kg wet	0.0227		103	70-130				
o-Xylene	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130				
Surrogate: 1,2-Dichloroethane-d4	*0.0288*		mg/Kg wet	0.0283		102	70-130				
Surrogate: Toluene-d8	*0.0274*		mg/Kg wet	0.0283		96.7	70-130				
Surrogate: 4-Bromofluorobenzene	*0.0282*		mg/Kg wet	0.0283		99.6	70-130				

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B290528 - SW-846 5035											
LCS Dup (B290528-BSD1)				Prepared & Analyzed: 09/20/21							
Acetone	0.117	0.057	mg/Kg wet	0.113		103	40-160	0.399	20		†
tert-Amyl Methyl Ether (TAME)	0.0113	0.00057	mg/Kg wet	0.0113		100	70-130	3.44	20		
Benzene	0.0107	0.0011	mg/Kg wet	0.0113		94.6	70-130	2.92	20		
Bromobenzene	0.0116	0.0011	mg/Kg wet	0.0113		102	70-130	3.93	20		
Bromochloromethane	0.0129	0.0011	mg/Kg wet	0.0113		114	70-130	4.80	20		
Bromodichloromethane	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130	6.50	20		
Bromoform	0.0140	0.0011	mg/Kg wet	0.0113		123	70-130	1.93	20	V-20	
Bromomethane	0.0121	0.0023	mg/Kg wet	0.0113		107	40-160	3.42	20	V-34	†
2-Butanone (MEK)	0.121	0.023	mg/Kg wet	0.113		107	40-160	3.15	20		†
n-Butylbenzene	0.00966	0.0011	mg/Kg wet	0.0113		85.2	70-130	6.14	20		
sec-Butylbenzene	0.00997	0.0011	mg/Kg wet	0.0113		88.0	70-130	4.01	20		
tert-Butylbenzene	0.0101	0.0011	mg/Kg wet	0.0113		89.5	70-130	2.10	20		
tert-Butyl Ethyl Ether (TBEE)	0.0118	0.00057	mg/Kg wet	0.0113		104	70-130	4.69	20		
Carbon Disulfide	0.117	0.011	mg/Kg wet	0.113		103	70-130	3.49	20		
Carbon Tetrachloride	0.0121	0.0011	mg/Kg wet	0.0113		106	70-130	1.40	20		
Chlorobenzene	0.0119	0.0011	mg/Kg wet	0.0113		105	70-130	2.36	20		
Chlorodibromomethane	0.0127	0.00057	mg/Kg wet	0.0113		112	70-130	4.44	20		
Chloroethane	0.0148	0.0023	mg/Kg wet	0.0113		130	70-130	4.28	20	V-20	
Chloroform	0.0115	0.0023	mg/Kg wet	0.0113		101	70-130	4.35	20		
Chloromethane	0.0117	0.0023	mg/Kg wet	0.0113		104	40-160	3.84	20		†
2-Chlorotoluene	0.0104	0.0011	mg/Kg wet	0.0113		91.9	70-130	2.05	20		
4-Chlorotoluene	0.0112	0.0011	mg/Kg wet	0.0113		98.4	70-130	4.37	20		
1,2-Dibromo-3-chloropropane (DBCP)	0.0107	0.0045	mg/Kg wet	0.0113		94.3	70-130	0.106	20		
1,2-Dibromoethane (EDB)	0.0124	0.00057	mg/Kg wet	0.0113		109	70-130	1.72	20		
Dibromomethane	0.0130	0.0011	mg/Kg wet	0.0113		114	70-130	3.35	20		
1,2-Dichlorobenzene	0.0112	0.0011	mg/Kg wet	0.0113		98.9	70-130	6.17	20		
1,3-Dichlorobenzene	0.0113	0.0011	mg/Kg wet	0.0113		99.4	70-130	3.07	20		
1,4-Dichlorobenzene	0.0111	0.0011	mg/Kg wet	0.0113		97.9	70-130	6.04	20		
Dichlorodifluoromethane (Freon 12)	0.0133	0.0023	mg/Kg wet	0.0113		118	40-160	2.60	20	V-20	†
1,1-Dichloroethane	0.0116	0.0011	mg/Kg wet	0.0113		102	70-130	3.46	20		
1,2-Dichloroethane	0.0117	0.0011	mg/Kg wet	0.0113		103	70-130	4.09	20		
1,1-Dichloroethylene	0.0115	0.0011	mg/Kg wet	0.0113		102	70-130	4.13	20		
cis-1,2-Dichloroethylene	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130	2.47	20		
trans-1,2-Dichloroethylene	0.0106	0.0011	mg/Kg wet	0.0113		93.3	70-130	0.322	20		
1,2-Dichloropropane	0.0119	0.0011	mg/Kg wet	0.0113		105	70-130	3.54	20		
1,3-Dichloropropane	0.0123	0.00057	mg/Kg wet	0.0113		109	70-130	1.55	20		
2,2-Dichloropropane	0.0120	0.0011	mg/Kg wet	0.0113		106	70-130	5.41	20		
1,1-Dichloropropene	0.0111	0.0023	mg/Kg wet	0.0113		97.8	70-130	2.22	20		
cis-1,3-Dichloropropene	0.0117	0.00057	mg/Kg wet	0.0113		103	70-130	4.09	20		
trans-1,3-Dichloropropene	0.0122	0.00057	mg/Kg wet	0.0113		108	70-130	3.20	20		
Diethyl Ether	0.0118	0.0023	mg/Kg wet	0.0113		104	70-130	4.69	20		
Diisopropyl Ether (DIPE)	0.0118	0.00057	mg/Kg wet	0.0113		104	70-130	1.80	20		
1,4-Dioxane	0.117	0.057	mg/Kg wet	0.113		103	40-160	3.82	20		†
Ethylbenzene	0.0112	0.0011	mg/Kg wet	0.0113		99.0	70-130	2.89	20		
Hexachlorobutadiene	0.0103	0.0011	mg/Kg wet	0.0113		90.7	70-130	9.55	20		
2-Hexanone (MBK)	0.122	0.011	mg/Kg wet	0.113		108	40-160	0.287	20		†
Isopropylbenzene (Cumene)	0.0112	0.0011	mg/Kg wet	0.0113		98.5	70-130	2.70	20		
p-Isopropyltoluene (p-Cymene)	0.0100	0.0011	mg/Kg wet	0.0113		88.2	70-130	5.51	20		
Methyl tert-Butyl Ether (MTBE)	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130	2.19	20		
Methylene Chloride	0.0127	0.0057	mg/Kg wet	0.0113		112	70-130	7.16	20		
4-Methyl-2-pentanone (MIBK)	0.124	0.011	mg/Kg wet	0.113		109	40-160	1.04	20		†
Naphthalene	0.00821	0.0023	mg/Kg wet	0.0113		72.4	70-130	8.97	20		

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290528 - SW-846 5035										
LCS Dup (B290528-BSD1)				Prepared & Analyzed: 09/20/21						
n-Propylbenzene	0.0107	0.0011	mg/Kg wet	0.0113		94.8	70-130	3.52	20	
Styrene	0.0114	0.0011	mg/Kg wet	0.0113		100	70-130	3.04	20	
1,1,1,2-Tetrachloroethane	0.0125	0.0011	mg/Kg wet	0.0113		110	70-130	6.24	20	
1,1,2,2-Tetrachloroethane	0.0127	0.00057	mg/Kg wet	0.0113		112	70-130	1.59	20	
Tetrachloroethylene	0.0118	0.0011	mg/Kg wet	0.0113		104	70-130	5.62	20	
Tetrahydrofuran	0.0116	0.0045	mg/Kg wet	0.0113		103	70-130	1.37	20	
Toluene	0.0111	0.0011	mg/Kg wet	0.0113		98.3	70-130	2.61	20	
1,2,3-Trichlorobenzene	0.00940	0.0045	mg/Kg wet	0.0113		82.9	70-130	5.17	20	
1,2,4-Trichlorobenzene	0.00949	0.0011	mg/Kg wet	0.0113		83.7	70-130	5.91	20	
1,1,1-Trichloroethane	0.0115	0.0011	mg/Kg wet	0.0113		102	70-130	3.29	20	
1,1,2-Trichloroethane	0.0124	0.0011	mg/Kg wet	0.0113		109	70-130	1.90	20	
Trichloroethylene	0.0115	0.0011	mg/Kg wet	0.0113		102	70-130	2.63	20	
Trichlorofluoromethane (Freon 11)	0.0129	0.0023	mg/Kg wet	0.0113		114	70-130	0.616	20	
1,2,3-Trichloropropane	0.0126	0.0023	mg/Kg wet	0.0113		111	70-130	2.58	20	
1,2,4-Trimethylbenzene	0.0102	0.0011	mg/Kg wet	0.0113		90.4	70-130	4.22	20	
1,3,5-Trimethylbenzene	0.0108	0.0011	mg/Kg wet	0.0113		95.7	70-130	2.27	20	
Vinyl Chloride	0.0104	0.0023	mg/Kg wet	0.0113		92.1	70-130	1.94	20	
m+p Xylene	0.0225	0.0023	mg/Kg wet	0.0227		99.4	70-130	3.12	20	
o-Xylene	0.0114	0.0011	mg/Kg wet	0.0113		100	70-130	3.52	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0287*		mg/Kg wet	0.0283		101	70-130			
Surrogate: Toluene-d8	*0.0275*		mg/Kg wet	0.0283		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0284*		mg/Kg wet	0.0283		100	70-130			
Batch B290543 - SW-846 5035										
Blank (B290543-BLK1)				Prepared & Analyzed: 09/20/21						
Acetone	ND	0.10	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.0060	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.010	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290543 - SW-846 5035										
Blank (B290543-BLK1)				Prepared & Analyzed: 09/20/21						
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.010	mg/Kg wet							V-05
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.010	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet							
Methylene Chloride	ND	0.010	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet							
Naphthalene	ND	0.0040	mg/Kg wet							
n-Propylbenzene	ND	0.0020	mg/Kg wet							
Styrene	ND	0.0020	mg/Kg wet							
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet							
Tetrachloroethylene	ND	0.0020	mg/Kg wet							
Tetrahydrofuran	ND	0.010	mg/Kg wet							
Toluene	ND	0.0020	mg/Kg wet							
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet							
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet							
Trichloroethylene	ND	0.0020	mg/Kg wet							
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet							
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet							
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet							
Vinyl Chloride	ND	0.010	mg/Kg wet							
m+p Xylene	ND	0.0040	mg/Kg wet							
o-Xylene	ND	0.0020	mg/Kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0477*		mg/Kg wet	0.0500		95.4	70-130			
Surrogate: Toluene-d8	*0.0483*		mg/Kg wet	0.0500		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0504*		mg/Kg wet	0.0500		101	70-130			

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B290543 - SW-846 5035											
LCS (B290543-BS1)				Prepared & Analyzed: 09/20/21							
Acetone	0.191	0.10	mg/Kg wet	0.200		95.5	40-160				†
tert-Amyl Methyl Ether (TAME)	0.0172	0.0010	mg/Kg wet	0.0200		85.8	70-130				
Benzene	0.0197	0.0020	mg/Kg wet	0.0200		98.7	70-130				
Bromobenzene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130				
Bromochloromethane	0.0215	0.0020	mg/Kg wet	0.0200		108	70-130				
Bromodichloromethane	0.0203	0.0020	mg/Kg wet	0.0200		101	70-130				
Bromoform	0.0244	0.0020	mg/Kg wet	0.0200		122	70-130			V-20	
Bromomethane	0.0184	0.010	mg/Kg wet	0.0200		92.1	40-160				†
2-Butanone (MEK)	0.176	0.040	mg/Kg wet	0.200		88.0	40-160				†
n-Butylbenzene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130				
sec-Butylbenzene	0.0209	0.0020	mg/Kg wet	0.0200		104	70-130				
tert-Butylbenzene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130				
tert-Butyl Ethyl Ether (TBEE)	0.0171	0.0010	mg/Kg wet	0.0200		85.3	70-130				
Carbon Disulfide	0.208	0.0060	mg/Kg wet	0.200		104	70-130				
Carbon Tetrachloride	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130				
Chlorobenzene	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130				
Chlorodibromomethane	0.0217	0.0010	mg/Kg wet	0.0200		108	70-130				
Chloroethane	0.0195	0.010	mg/Kg wet	0.0200		97.3	70-130				
Chloroform	0.0206	0.0040	mg/Kg wet	0.0200		103	70-130				
Chloromethane	0.0175	0.010	mg/Kg wet	0.0200		87.6	40-160				†
2-Chlorotoluene	0.0219	0.0020	mg/Kg wet	0.0200		110	70-130				
4-Chlorotoluene	0.0219	0.0020	mg/Kg wet	0.0200		110	70-130				
1,2-Dibromo-3-chloropropane (DBCP)	0.0187	0.0020	mg/Kg wet	0.0200		93.4	70-130				
1,2-Dibromoethane (EDB)	0.0224	0.0010	mg/Kg wet	0.0200		112	70-130				
Dibromomethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130				
1,2-Dichlorobenzene	0.0207	0.0020	mg/Kg wet	0.0200		104	70-130				
1,3-Dichlorobenzene	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130				
1,4-Dichlorobenzene	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130				
Dichlorodifluoromethane (Freon 12)	0.0144	0.010	mg/Kg wet	0.0200		72.2	40-160			V-05	†
1,1-Dichloroethane	0.0196	0.0020	mg/Kg wet	0.0200		98.2	70-130				
1,2-Dichloroethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130				
1,1-Dichloroethylene	0.0196	0.0040	mg/Kg wet	0.0200		98.0	70-130				
cis-1,2-Dichloroethylene	0.0190	0.0020	mg/Kg wet	0.0200		94.9	70-130				
trans-1,2-Dichloroethylene	0.0198	0.0020	mg/Kg wet	0.0200		99.0	70-130				
1,2-Dichloropropane	0.0199	0.0020	mg/Kg wet	0.0200		99.6	70-130				
1,3-Dichloropropane	0.0200	0.0010	mg/Kg wet	0.0200		100	70-130				
2,2-Dichloropropane	0.0189	0.0020	mg/Kg wet	0.0200		94.6	70-130				
1,1-Dichloropropene	0.0198	0.0020	mg/Kg wet	0.0200		99.2	70-130				
cis-1,3-Dichloropropene	0.0204	0.0010	mg/Kg wet	0.0200		102	70-130				
trans-1,3-Dichloropropene	0.0200	0.0010	mg/Kg wet	0.0200		100	70-130				
Diethyl Ether	0.0202	0.010	mg/Kg wet	0.0200		101	70-130				
Diisopropyl Ether (DIPE)	0.0169	0.0010	mg/Kg wet	0.0200		84.3	70-130				
1,4-Dioxane	0.209	0.10	mg/Kg wet	0.200		105	40-160				†
Ethylbenzene	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130				
Hexachlorobutadiene	0.0226	0.0020	mg/Kg wet	0.0200		113	70-130			V-20	
2-Hexanone (MBK)	0.169	0.020	mg/Kg wet	0.200		84.3	40-160				†
Isopropylbenzene (Cumene)	0.0217	0.0020	mg/Kg wet	0.0200		109	70-130				
p-Isopropyltoluene (p-Cymene)	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130				
Methyl tert-Butyl Ether (MTBE)	0.0179	0.0040	mg/Kg wet	0.0200		89.5	70-130				
Methylene Chloride	0.0180	0.010	mg/Kg wet	0.0200		89.9	70-130				
4-Methyl-2-pentanone (MIBK)	0.175	0.020	mg/Kg wet	0.200		87.5	40-160				†
Naphthalene	0.0150	0.0040	mg/Kg wet	0.0200		75.0	70-130				

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B290543 - SW-846 5035											
LCS (B290543-BS1)				Prepared & Analyzed: 09/20/21							
n-Propylbenzene	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130				
Styrene	0.0207	0.0020	mg/Kg wet	0.0200		104	70-130				
1,1,1,2-Tetrachloroethane	0.0225	0.0020	mg/Kg wet	0.0200		113	70-130				
1,1,2,2-Tetrachloroethane	0.0227	0.0010	mg/Kg wet	0.0200		113	70-130				
Tetrachloroethylene	0.0218	0.0020	mg/Kg wet	0.0200		109	70-130				
Tetrahydrofuran	0.0188	0.010	mg/Kg wet	0.0200		94.2	70-130				
Toluene	0.0196	0.0020	mg/Kg wet	0.0200		97.8	70-130				
1,2,3-Trichlorobenzene	0.0178	0.0020	mg/Kg wet	0.0200		88.8	70-130				
1,2,4-Trichlorobenzene	0.0182	0.0020	mg/Kg wet	0.0200		91.1	70-130				
1,1,1-Trichloroethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130				
1,1,2-Trichloroethane	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130				
Trichloroethylene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130				
Trichlorofluoromethane (Freon 11)	0.0208	0.010	mg/Kg wet	0.0200		104	70-130				
1,2,3-Trichloropropane	0.0223	0.0020	mg/Kg wet	0.0200		111	70-130				
1,2,4-Trimethylbenzene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130				
1,3,5-Trimethylbenzene	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130				
Vinyl Chloride	0.0182	0.010	mg/Kg wet	0.0200		91.1	70-130				
m+p Xylene	0.0392	0.0040	mg/Kg wet	0.0400		98.0	70-130				
o-Xylene	0.0199	0.0020	mg/Kg wet	0.0200		99.3	70-130				
Surrogate: 1,2-Dichloroethane-d4	*0.0463*		mg/Kg wet	0.0500		92.6	70-130				
Surrogate: Toluene-d8	*0.0484*		mg/Kg wet	0.0500		96.8	70-130				
Surrogate: 4-Bromofluorobenzene	*0.0484*		mg/Kg wet	0.0500		96.8	70-130				
LCS Dup (B290543-BSD1)				Prepared & Analyzed: 09/20/21							
Acetone	0.192	0.10	mg/Kg wet	0.200		96.0	40-160	0.491	20		†
tert-Amyl Methyl Ether (TAME)	0.0170	0.0010	mg/Kg wet	0.0200		85.2	70-130	0.702	20		
Benzene	0.0192	0.0020	mg/Kg wet	0.0200		96.2	70-130	2.57	20		
Bromobenzene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130	1.09	20		
Bromochloromethane	0.0213	0.0020	mg/Kg wet	0.0200		106	70-130	1.12	20		
Bromodichloromethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	0.197	20		
Bromoform	0.0241	0.0020	mg/Kg wet	0.0200		120	70-130	1.07	20	V-20	
Bromomethane	0.0196	0.010	mg/Kg wet	0.0200		98.2	40-160	6.41	20		†
2-Butanone (MEK)	0.178	0.040	mg/Kg wet	0.200		89.1	40-160	1.27	20		†
n-Butylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.7	70-130	3.29	20		
sec-Butylbenzene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	3.21	20		
tert-Butylbenzene	0.0199	0.0020	mg/Kg wet	0.0200		99.6	70-130	1.10	20		
tert-Butyl Ethyl Ether (TBEE)	0.0170	0.0010	mg/Kg wet	0.0200		85.2	70-130	0.117	20		
Carbon Disulfide	0.200	0.0060	mg/Kg wet	0.200		100	70-130	3.92	20		
Carbon Tetrachloride	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	4.59	20		
Chlorobenzene	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	4.42	20		
Chlorodibromomethane	0.0213	0.0010	mg/Kg wet	0.0200		107	70-130	1.67	20		
Chloroethane	0.0196	0.010	mg/Kg wet	0.0200		97.9	70-130	0.615	20		
Chloroform	0.0202	0.0040	mg/Kg wet	0.0200		101	70-130	1.86	20		
Chloromethane	0.0172	0.010	mg/Kg wet	0.0200		86.2	40-160	1.61	20		†
2-Chlorotoluene	0.0205	0.0020	mg/Kg wet	0.0200		102	70-130	6.69	20		
4-Chlorotoluene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130	7.09	20		
1,2-Dibromo-3-chloropropane (DBCP)	0.0217	0.0020	mg/Kg wet	0.0200		108	70-130	14.9	20		
1,2-Dibromoethane (EDB)	0.0221	0.0010	mg/Kg wet	0.0200		111	70-130	1.35	20		
Dibromomethane	0.0219	0.0020	mg/Kg wet	0.0200		110	70-130	7.97	20		
1,2-Dichlorobenzene	0.0211	0.0020	mg/Kg wet	0.0200		106	70-130	1.72	20		
1,3-Dichlorobenzene	0.0209	0.0020	mg/Kg wet	0.0200		105	70-130	1.99	20		
1,4-Dichlorobenzene	0.0217	0.0020	mg/Kg wet	0.0200		108	70-130	0.735	20		

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B290543 - SW-846 5035											
LCS Dup (B290543-BSD1)				Prepared & Analyzed: 09/20/21							
Dichlorodifluoromethane (Freon 12)	0.0143	0.010	mg/Kg wet	0.0200		71.3	40-160	1.25	20	V-05	†
1,1-Dichloroethane	0.0191	0.0020	mg/Kg wet	0.0200		95.6	70-130	2.68	20		
1,2-Dichloroethane	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	0.795	20		
1,1-Dichloroethylene	0.0187	0.0040	mg/Kg wet	0.0200		93.6	70-130	4.59	20		
cis-1,2-Dichloroethylene	0.0188	0.0020	mg/Kg wet	0.0200		93.9	70-130	1.06	20		
trans-1,2-Dichloroethylene	0.0195	0.0020	mg/Kg wet	0.0200		97.3	70-130	1.73	20		
1,2-Dichloropropane	0.0198	0.0020	mg/Kg wet	0.0200		99.2	70-130	0.402	20		
1,3-Dichloropropane	0.0203	0.0010	mg/Kg wet	0.0200		101	70-130	1.09	20		
2,2-Dichloropropane	0.0185	0.0020	mg/Kg wet	0.0200		92.5	70-130	2.24	20		
1,1-Dichloropropene	0.0191	0.0020	mg/Kg wet	0.0200		95.4	70-130	3.91	20		
cis-1,3-Dichloropropene	0.0207	0.0010	mg/Kg wet	0.0200		103	70-130	1.36	20		
trans-1,3-Dichloropropene	0.0205	0.0010	mg/Kg wet	0.0200		102	70-130	2.27	20		
Diethyl Ether	0.0209	0.010	mg/Kg wet	0.0200		104	70-130	3.12	20		
Diisopropyl Ether (DIPE)	0.0170	0.0010	mg/Kg wet	0.0200		84.9	70-130	0.709	20		
1,4-Dioxane	0.204	0.10	mg/Kg wet	0.200		102	40-160	2.55	20		†
Ethylbenzene	0.0190	0.0020	mg/Kg wet	0.0200		95.1	70-130	2.90	20		
Hexachlorobutadiene	0.0231	0.0020	mg/Kg wet	0.0200		116	70-130	2.27	20	V-20	
2-Hexanone (MBK)	0.174	0.020	mg/Kg wet	0.200		86.8	40-160	2.91	20		†
Isopropylbenzene (Cumene)	0.0216	0.0020	mg/Kg wet	0.0200		108	70-130	0.461	20		
p-Isopropyltoluene (p-Cymene)	0.0201	0.0020	mg/Kg wet	0.0200		100	70-130	1.38	20		
Methyl tert-Butyl Ether (MTBE)	0.0180	0.0040	mg/Kg wet	0.0200		90.1	70-130	0.668	20		
Methylene Chloride	0.0175	0.010	mg/Kg wet	0.0200		87.7	70-130	2.48	20		
4-Methyl-2-pentanone (MIBK)	0.174	0.020	mg/Kg wet	0.200		86.9	40-160	0.780	20		†
Naphthalene	0.0179	0.0040	mg/Kg wet	0.0200		89.3	70-130	17.4	20		
n-Propylbenzene	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130	4.58	20		
Styrene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130	2.84	20		
1,1,1,2-Tetrachloroethane	0.0220	0.0020	mg/Kg wet	0.0200		110	70-130	2.33	20		
1,1,2,2-Tetrachloroethane	0.0225	0.0010	mg/Kg wet	0.0200		112	70-130	0.975	20		
Tetrachloroethylene	0.0214	0.0020	mg/Kg wet	0.0200		107	70-130	1.67	20		
Tetrahydrofuran	0.0220	0.010	mg/Kg wet	0.0200		110	70-130	15.3	20		
Toluene	0.0190	0.0020	mg/Kg wet	0.0200		95.1	70-130	2.80	20		
1,2,3-Trichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.3	70-130	4.94	20		
1,2,4-Trichlorobenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.6	70-130	4.82	20		
1,1,1-Trichloroethane	0.0193	0.0020	mg/Kg wet	0.0200		96.4	70-130	4.46	20		
1,1,2-Trichloroethane	0.0198	0.0020	mg/Kg wet	0.0200		98.9	70-130	5.12	20		
Trichloroethylene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130	0.295	20		
Trichlorofluoromethane (Freon 11)	0.0203	0.010	mg/Kg wet	0.0200		102	70-130	2.14	20		
1,2,3-Trichloropropane	0.0228	0.0020	mg/Kg wet	0.0200		114	70-130	2.48	20		
1,2,4-Trimethylbenzene	0.0195	0.0020	mg/Kg wet	0.0200		97.4	70-130	4.42	20		
1,3,5-Trimethylbenzene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	1.16	20		
Vinyl Chloride	0.0173	0.010	mg/Kg wet	0.0200		86.4	70-130	5.30	20		
m+p Xylene	0.0372	0.0040	mg/Kg wet	0.0400		93.1	70-130	5.13	20		
o-Xylene	0.0192	0.0020	mg/Kg wet	0.0200		96.0	70-130	3.38	20		
Surrogate: 1,2-Dichloroethane-d4	*0.0461*		mg/Kg wet	0.0500		92.3	70-130				
Surrogate: Toluene-d8	*0.0492*		mg/Kg wet	0.0500		98.4	70-130				
Surrogate: 4-Bromofluorobenzene	*0.0494*		mg/Kg wet	0.0500		98.8	70-130				

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290486 - SW-846 3546										
Blank (B290486-BLK1)				Prepared: 09/17/21 Analyzed: 09/20/21						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.199*		mg/Kg wet	0.200		99.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.179*		mg/Kg wet	0.200		89.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.192*		mg/Kg wet	0.200		95.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.189*		mg/Kg wet	0.200		94.7	30-150			
LCS (B290486-BS1)				Prepared: 09/17/21 Analyzed: 09/20/21						
Aroclor-1016	0.16	0.020	mg/Kg wet	0.200		80.1	40-140			
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200		77.7	40-140			
Aroclor-1260	0.15	0.020	mg/Kg wet	0.200		75.9	40-140			
Aroclor-1260 [2C]	0.14	0.020	mg/Kg wet	0.200		69.1	40-140			
Surrogate: Decachlorobiphenyl	*0.181*		mg/Kg wet	0.200		90.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.163*		mg/Kg wet	0.200		81.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.172*		mg/Kg wet	0.200		85.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.169*		mg/Kg wet	0.200		84.6	30-150			
LCS Dup (B290486-BSD1)				Prepared: 09/17/21 Analyzed: 09/20/21						
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		87.9	40-140	9.25	30	
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		85.1	40-140	9.05	30	
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		83.5	40-140	9.57	30	
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200		75.7	40-140	9.11	30	
Surrogate: Decachlorobiphenyl	*0.197*		mg/Kg wet	0.200		98.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.177*		mg/Kg wet	0.200		88.5	30-150			
Surrogate: Tetrachloro-m-xylene	*0.188*		mg/Kg wet	0.200		94.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.185*		mg/Kg wet	0.200		92.6	30-150			

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290486 - SW-846 3546										
Matrix Spike (B290486-MS1)	**Source: 21I0921-01**			Prepared: 09/17/21 Analyzed: 09/22/21						
Aroclor-1016	0.14	0.089	mg/Kg dry	0.224	ND	63.9	40-140			
Aroclor-1016 [2C]	0.14	0.089	mg/Kg dry	0.224	ND	62.4	40-140			
Aroclor-1260	0.14	0.089	mg/Kg dry	0.224	ND	61.0	40-140			
Aroclor-1260 [2C]	0.13	0.089	mg/Kg dry	0.224	ND	57.5	40-140			
Surrogate: Decachlorobiphenyl	*0.146*		mg/Kg dry	0.224		65.1	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.136*		mg/Kg dry	0.224		60.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.123*		mg/Kg dry	0.224		54.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.124*		mg/Kg dry	0.224		55.6	30-150			
Matrix Spike Dup (B290486-MSD1)	**Source: 21I0921-01**			Prepared: 09/17/21 Analyzed: 09/22/21						
Aroclor-1016	0.16	0.089	mg/Kg dry	0.224	ND	73.5	40-140	14.0	30	
Aroclor-1016 [2C]	0.16	0.089	mg/Kg dry	0.224	ND	73.1	40-140	15.8	30	
Aroclor-1260	0.16	0.089	mg/Kg dry	0.224	ND	72.0	40-140	16.6	30	
Aroclor-1260 [2C]	0.15	0.089	mg/Kg dry	0.224	ND	67.9	40-140	16.6	30	
Surrogate: Decachlorobiphenyl	*0.175*		mg/Kg dry	0.224		78.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.163*		mg/Kg dry	0.224		72.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.147*		mg/Kg dry	0.224		65.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.149*		mg/Kg dry	0.224		66.6	30-150			

QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290504 - SW-846 3546										
Blank (B290504-BLK1)				Prepared: 09/18/21 Analyzed: 09/21/21						
C9-C18 Aliphatics	ND	10	mg/Kg wet							
C19-C36 Aliphatics	ND	10	mg/Kg wet							
Unadjusted C11-C22 Aromatics	ND	10	mg/Kg wet							
C11-C22 Aromatics	ND	10	mg/Kg wet							
Acenaphthene	ND	0.10	mg/Kg wet							
Acenaphthylene	ND	0.10	mg/Kg wet							
Anthracene	ND	0.10	mg/Kg wet							
Benzo(a)anthracene	ND	0.10	mg/Kg wet							
Benzo(a)pyrene	ND	0.10	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.10	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.10	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.10	mg/Kg wet							
Chrysene	ND	0.10	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.10	mg/Kg wet							
Fluoranthene	ND	0.10	mg/Kg wet							
Fluorene	ND	0.10	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.10	mg/Kg wet							
2-Methylnaphthalene	ND	0.10	mg/Kg wet							
Naphthalene	ND	0.10	mg/Kg wet							
Phenanthrene	ND	0.10	mg/Kg wet							
Pyrene	ND	0.10	mg/Kg wet							
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet							
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet							
Surrogate: Chlorooctadecane (COD)	*3.20*		mg/Kg wet	5.00		63.9	40-140			
Surrogate: o-Terphenyl (OTP)	*3.31*		mg/Kg wet	5.00		66.1	40-140			
Surrogate: 2-Bromonaphthalene	*4.47*		mg/Kg wet	5.00		89.4	40-140			
Surrogate: 2-Fluorobiphenyl	*4.60*		mg/Kg wet	5.00		92.0	40-140			
LCS (B290504-BS1)				Prepared: 09/18/21 Analyzed: 09/21/21						
C9-C18 Aliphatics	20.6	10	mg/Kg wet	30.0		68.5	40-140			
C19-C36 Aliphatics	34.1	10	mg/Kg wet	40.0		85.2	40-140			
Unadjusted C11-C22 Aromatics	74.3	10	mg/Kg wet	85.0		87.4	40-140			
Acenaphthene	3.66	0.10	mg/Kg wet	5.00		73.1	40-140			
Acenaphthylene	3.45	0.10	mg/Kg wet	5.00		69.0	40-140			
Anthracene	3.94	0.10	mg/Kg wet	5.00		78.8	40-140			
Benzo(a)anthracene	4.38	0.10	mg/Kg wet	5.00		87.6	40-140			
Benzo(a)pyrene	4.37	0.10	mg/Kg wet	5.00		87.4	40-140			
Benzo(b)fluoranthene	4.13	0.10	mg/Kg wet	5.00		82.6	40-140			
Benzo(g,h,i)perylene	4.02	0.10	mg/Kg wet	5.00		80.5	40-140			
Benzo(k)fluoranthene	3.97	0.10	mg/Kg wet	5.00		79.3	40-140			
Chrysene	3.98	0.10	mg/Kg wet	5.00		79.6	40-140			
Dibenz(a,h)anthracene	4.27	0.10	mg/Kg wet	5.00		85.4	40-140			
Fluoranthene	3.88	0.10	mg/Kg wet	5.00		77.7	40-140			
Fluorene	3.74	0.10	mg/Kg wet	5.00		74.8	40-140			
Indeno(1,2,3-cd)pyrene	4.01	0.10	mg/Kg wet	5.00		80.3	40-140			
2-Methylnaphthalene	3.42	0.10	mg/Kg wet	5.00		68.4	40-140			
Naphthalene	3.32	0.10	mg/Kg wet	5.00		66.4	40-140			
Phenanthrene	3.98	0.10	mg/Kg wet	5.00		79.7	40-140			
Pyrene	3.99	0.10	mg/Kg wet	5.00		79.8	40-140			
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	*3.52*		mg/Kg wet	5.00		70.3	40-140			

QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290504 - SW-846 3546										
LCS (B290504-BS1)				Prepared: 09/18/21 Analyzed: 09/21/21						
Surrogate: o-Terphenyl (OTP)	*3.42*		mg/Kg wet	5.00		68.4	40-140			
Surrogate: 2-Bromonaphthalene	*4.67*		mg/Kg wet	5.00		93.4	40-140			
Surrogate: 2-Fluorobiphenyl	*4.67*		mg/Kg wet	5.00		93.3	40-140			
LCS Dup (B290504-BSD1)				Prepared: 09/18/21 Analyzed: 09/21/21						
C9-C18 Aliphatics	17.8	10	mg/Kg wet	30.0		59.4	40-140	14.2	25	
C19-C36 Aliphatics	28.2	10	mg/Kg wet	40.0		70.5	40-140	18.8	25	
Unadjusted C11-C22 Aromatics	65.5	10	mg/Kg wet	85.0		77.1	40-140	12.5	25	
Acenaphthene	3.32	0.10	mg/Kg wet	5.00		66.5	40-140	9.51	25	
Acenaphthylene	3.18	0.10	mg/Kg wet	5.00		63.5	40-140	8.25	25	
Anthracene	3.45	0.10	mg/Kg wet	5.00		69.1	40-140	13.2	25	
Benzo(a)anthracene	3.82	0.10	mg/Kg wet	5.00		76.4	40-140	13.7	25	
Benzo(a)pyrene	3.78	0.10	mg/Kg wet	5.00		75.6	40-140	14.5	25	
Benzo(b)fluoranthene	3.58	0.10	mg/Kg wet	5.00		71.5	40-140	14.4	25	
Benzo(g,h,i)perylene	3.44	0.10	mg/Kg wet	5.00		68.7	40-140	15.7	25	
Benzo(k)fluoranthene	3.44	0.10	mg/Kg wet	5.00		68.9	40-140	14.1	25	
Chrysene	3.47	0.10	mg/Kg wet	5.00		69.4	40-140	13.6	25	
Dibenz(a,h)anthracene	3.66	0.10	mg/Kg wet	5.00		73.2	40-140	15.3	25	
Fluoranthene	3.40	0.10	mg/Kg wet	5.00		68.0	40-140	13.3	25	
Fluorene	3.31	0.10	mg/Kg wet	5.00		66.2	40-140	12.2	25	
Indeno(1,2,3-cd)pyrene	3.44	0.10	mg/Kg wet	5.00		68.8	40-140	15.4	25	
2-Methylnaphthalene	3.28	0.10	mg/Kg wet	5.00		65.5	40-140	4.32	25	
Naphthalene	3.25	0.10	mg/Kg wet	5.00		65.0	40-140	2.15	25	
Phenanthrene	3.49	0.10	mg/Kg wet	5.00		69.8	40-140	13.2	25	
Pyrene	3.50	0.10	mg/Kg wet	5.00		69.9	40-140	13.2	25	
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00			0-5			
Surrogate: Chlorooctadecane (COD)	*2.84*		mg/Kg wet	5.00		56.8	40-140			
Surrogate: o-Terphenyl (OTP)	*2.95*		mg/Kg wet	5.00		59.1	40-140			
Surrogate: 2-Bromonaphthalene	*4.38*		mg/Kg wet	5.00		87.7	40-140			
Surrogate: 2-Fluorobiphenyl	*4.57*		mg/Kg wet	5.00		91.3	40-140			
Matrix Spike (B290504-MS1)	**Source: 21I0921-01**			Prepared: 09/18/21 Analyzed: 09/22/21						
C9-C18 Aliphatics	24.2	11	mg/Kg dry	33.4	ND	72.6	40-140			
C19-C36 Aliphatics	37.6	11	mg/Kg dry	44.5	ND	84.5	40-140			
Unadjusted C11-C22 Aromatics	75.6	11	mg/Kg dry	94.6	ND	80.0	40-140			
Acenaphthene	3.91	0.11	mg/Kg dry	5.56	ND	70.4	40-140			
Acenaphthylene	3.74	0.11	mg/Kg dry	5.56	ND	67.2	40-140			
Anthracene	4.00	0.11	mg/Kg dry	5.56	ND	71.8	40-140			
Benzo(a)anthracene	4.37	0.11	mg/Kg dry	5.56	ND	78.6	40-140			
Benzo(a)pyrene	4.41	0.11	mg/Kg dry	5.56	ND	79.2	40-140			
Benzo(b)fluoranthene	4.16	0.11	mg/Kg dry	5.56	ND	74.7	40-140			
Benzo(g,h,i)perylene	4.06	0.11	mg/Kg dry	5.56	ND	73.1	40-140			
Benzo(k)fluoranthene	3.96	0.11	mg/Kg dry	5.56	ND	71.3	40-140			
Chrysene	3.98	0.11	mg/Kg dry	5.56	ND	71.5	40-140			
Dibenz(a,h)anthracene	4.27	0.11	mg/Kg dry	5.56	ND	76.8	40-140			
Fluoranthene	3.91	0.11	mg/Kg dry	5.56	ND	70.3	40-140			
Fluorene	3.89	0.11	mg/Kg dry	5.56	ND	69.9	40-140			
Indeno(1,2,3-cd)pyrene	4.02	0.11	mg/Kg dry	5.56	ND	72.2	40-140			
2-Methylnaphthalene	3.88	0.11	mg/Kg dry	5.56	ND	69.8	40-140			
Naphthalene	3.91	0.11	mg/Kg dry	5.56	ND	70.3	40-140			
Phenanthrene	4.06	0.11	mg/Kg dry	5.56	ND	73.0	40-140			

QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290504 - SW-846 3546										
Matrix Spike (B290504-MS1)	**Source: 21I0921-01**			Prepared: 09/18/21 Analyzed: 09/22/21						
Pyrene	4.02	0.11	mg/Kg dry	5.56	ND	72.2	40-140			
Surrogate: Chlorooctadecane (COD)	*3.74*		mg/Kg dry	5.56		67.3	40-140			
Surrogate: o-Terphenyl (OTP)	*3.39*		mg/Kg dry	5.56		61.0	40-140			
Surrogate: 2-Bromonaphthalene	*4.99*		mg/Kg dry	5.56		89.7	40-140			
Surrogate: 2-Fluorobiphenyl	*5.09*		mg/Kg dry	5.56		91.4	40-140			
Matrix Spike Dup (B290504-MSD1)	**Source: 21I0921-01**			Prepared: 09/18/21 Analyzed: 09/22/21						
C9-C18 Aliphatics	23.9	11	mg/Kg dry	33.4	ND	71.5	40-140	1.48	50	
C19-C36 Aliphatics	39.2	11	mg/Kg dry	44.5	ND	88.1	40-140	4.14	50	
Unadjusted C11-C22 Aromatics	85.0	11	mg/Kg dry	94.6	ND	89.9	40-140	11.7	50	
Acenaphthene	4.14	0.11	mg/Kg dry	5.56	ND	74.5	40-140	5.69	50	
Acenaphthylene	3.92	0.11	mg/Kg dry	5.56	ND	70.5	40-140	4.77	50	
Anthracene	4.40	0.11	mg/Kg dry	5.56	ND	79.1	40-140	9.64	50	
Benzo(a)anthracene	4.89	0.11	mg/Kg dry	5.56	ND	87.9	40-140	11.1	50	
Benzo(a)pyrene	4.82	0.11	mg/Kg dry	5.56	ND	86.7	40-140	9.08	50	
Benzo(b)fluoranthene	4.59	0.11	mg/Kg dry	5.56	ND	82.5	40-140	9.97	50	
Benzo(g,h,i)perylene	4.42	0.11	mg/Kg dry	5.56	ND	79.5	40-140	8.48	50	
Benzo(k)fluoranthene	4.35	0.11	mg/Kg dry	5.56	ND	78.1	40-140	9.19	50	
Chrysene	4.39	0.11	mg/Kg dry	5.56	ND	78.8	40-140	9.77	50	
Dibenz(a,h)anthracene	4.61	0.11	mg/Kg dry	5.56	ND	82.9	40-140	7.61	50	
Fluoranthene	4.40	0.11	mg/Kg dry	5.56	ND	79.0	40-140	11.7	50	
Fluorene	4.21	0.11	mg/Kg dry	5.56	ND	75.7	40-140	7.93	50	
Indeno(1,2,3-cd)pyrene	4.40	0.11	mg/Kg dry	5.56	ND	79.1	40-140	9.06	50	
2-Methylnaphthalene	3.90	0.11	mg/Kg dry	5.56	ND	70.0	40-140	0.266	50	
Naphthalene	3.80	0.11	mg/Kg dry	5.56	ND	68.2	40-140	2.94	50	
Phenanthrene	4.50	0.11	mg/Kg dry	5.56	ND	80.9	40-140	10.2	50	
Pyrene	4.52	0.11	mg/Kg dry	5.56	ND	81.3	40-140	11.9	50	
Surrogate: Chlorooctadecane (COD)	*3.89*		mg/Kg dry	5.56		70.0	40-140			
Surrogate: o-Terphenyl (OTP)	*3.66*		mg/Kg dry	5.56		65.9	40-140			
Surrogate: 2-Bromonaphthalene	*4.94*		mg/Kg dry	5.56		88.8	40-140			
Surrogate: 2-Fluorobiphenyl	*5.19*		mg/Kg dry	5.56		93.2	40-140			

QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290675 - MA VPH										
Blank (B290675-BLK1)				Prepared & Analyzed: 09/21/21						
Unadjusted C5-C8 Aliphatics	ND	10	mg/Kg wet							
C5-C8 Aliphatics	ND	10	mg/Kg wet							
Unadjusted C9-C12 Aliphatics	ND	10	mg/Kg wet							
C9-C12 Aliphatics	ND	10	mg/Kg wet							
C9-C10 Aromatics	ND	10	mg/Kg wet							
Benzene	ND	0.050	mg/Kg wet							
Butylcyclohexane	ND	0.050	mg/Kg wet							
Decane	ND	0.050	mg/Kg wet							
Ethylbenzene	ND	0.050	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg wet							
2-Methylpentane	ND	0.050	mg/Kg wet							
Naphthalene	ND	0.25	mg/Kg wet							
Nonane	ND	0.050	mg/Kg wet							
Pentane	ND	0.050	mg/Kg wet							
Toluene	ND	0.050	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg wet							
2,2,4-Trimethylpentane	ND	0.050	mg/Kg wet							
m+p Xylene	ND	0.10	mg/Kg wet							
o-Xylene	ND	0.050	mg/Kg wet							
Surrogate: 2,5-Dibromotoluene (FID)	*37.7*		µg/L	40.0		94.2	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*38.4*		µg/L	40.0		96.0	70-130			
LCS (B290675-BS1)				Prepared & Analyzed: 09/21/21						
Benzene	0.0468	0.0010	mg/Kg wet	0.0500		93.6	70-130			
Butylcyclohexane	0.0600	0.0010	mg/Kg wet	0.0500		120	70-130			
Decane	0.0447	0.0010	mg/Kg wet	0.0500		89.3	70-130			
Ethylbenzene	0.0466	0.0010	mg/Kg wet	0.0500		93.2	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0462	0.0010	mg/Kg wet	0.0500		92.5	70-130			
2-Methylpentane	0.0439	0.0010	mg/Kg wet	0.0500		87.9	70-130			
Naphthalene	0.0536	0.0050	mg/Kg wet	0.0500		107	70-130			
Nonane	0.0600	0.0010	mg/Kg wet	0.0500		120	30-130			
Pentane	0.0464	0.0010	mg/Kg wet	0.0500		92.7	70-130			
Toluene	0.0463	0.0010	mg/Kg wet	0.0500		92.5	70-130			
1,2,4-Trimethylbenzene	0.0431	0.0010	mg/Kg wet	0.0500		86.3	70-130			
2,2,4-Trimethylpentane	0.0403	0.0010	mg/Kg wet	0.0500		80.7	70-130			
m+p Xylene	0.0922	0.0020	mg/Kg wet	0.100		92.2	70-130			
o-Xylene	0.0468	0.0010	mg/Kg wet	0.0500		93.6	70-130			
Surrogate: 2,5-Dibromotoluene (FID)	*37.6*		µg/L	40.0		93.9	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*40.3*		µg/L	40.0		101	70-130			
LCS Dup (B290675-BSD1)				Prepared & Analyzed: 09/21/21						
Benzene	0.0456	0.0010	mg/Kg wet	0.0500		91.1	70-130	2.73	25	
Butylcyclohexane	0.0588	0.0010	mg/Kg wet	0.0500		118	70-130	2.17	25	
Decane	0.0430	0.0010	mg/Kg wet	0.0500		86.1	70-130	3.70	25	
Ethylbenzene	0.0452	0.0010	mg/Kg wet	0.0500		90.5	70-130	3.03	25	
Methyl tert-Butyl Ether (MTBE)	0.0467	0.0010	mg/Kg wet	0.0500		93.3	70-130	0.922	25	
2-Methylpentane	0.0410	0.0010	mg/Kg wet	0.0500		81.9	70-130	7.02	25	
Naphthalene	0.0543	0.0050	mg/Kg wet	0.0500		109	70-130	1.40	25	
Nonane	0.0586	0.0010	mg/Kg wet	0.0500		117	30-130	2.37	25	
Pentane	0.0426	0.0010	mg/Kg wet	0.0500		85.3	70-130	8.34	25	
Toluene	0.0450	0.0010	mg/Kg wet	0.0500		90.1	70-130	2.72	25	
1,2,4-Trimethylbenzene	0.0424	0.0010	mg/Kg wet	0.0500		84.9	70-130	1.68	25	

QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290675 - MA VPH										
LCS Dup (B290675-BSD1)				Prepared & Analyzed: 09/21/21						
2,2,4-Trimethylpentane	0.0371	0.0010	mg/Kg wet	0.0500		74.2	70-130	8.38	25	
m+p Xylene	0.0898	0.0020	mg/Kg wet	0.100		89.8	70-130	2.68	25	
o-Xylene	0.0459	0.0010	mg/Kg wet	0.0500		91.9	70-130	1.81	25	
Surrogate: 2,5-Dibromotoluene (FID)	*41.8*		µg/L	40.0		104	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*41.7*		µg/L	40.0		104	70-130			

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290709 - % Solids										
Duplicate (B290709-DUP4)	**Source: 21I0921-11**		Prepared: 09/21/21 Analyzed: 09/22/21							
% Solids	82.0		% Wt		83.2			1.39	5	

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B290486-BS1 Date(s) Analyzed: 09/20/2021 09/20/2021

Instrument ID (1): ECD5 Instrument ID (2): ECD5

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.16	
	2	0.000	0.000	0.000	0.16	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.15	
	2	0.000	0.000	0.000	0.14	6.9

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B290486-BSD1 Date(s) Analyzed: 09/20/2021 09/20/2021

Instrument ID (1): ECD5 Instrument ID (2): ECD5

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.17	5.7
Aroclor-1260	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.15	12.5

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

Matrix Spike

Lab Sample ID: B290486-MS1 Date(s) Analyzed: 09/22/2021 09/22/2021

Instrument ID (1): ECD5 Instrument ID (2): ECD5

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.14	
	2	0.000	0.000	0.000	0.14	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.14	
	2	0.000	0.000	0.000	0.13	7.4

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

Matrix Spike Dup

Lab Sample ID: B290486-MSD1

Date(s) Analyzed: 09/22/2021 09/22/2021

Instrument ID (1): ECD5

Instrument ID (2): ECD5

GC Column (1): ID: (mm)

GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.16	
	2	0.000	0.000	0.000	0.16	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.16	
	2	0.000	0.000	0.000	0.15	6.5

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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
O-01	Soil/methanol ratio does not meet method specifications. Excess amount of soil. Sample was completely covered with methanol, but with less than the method-specified amount.
O-32	A dilution was performed as part of the standard analytical procedure.
RL-05	Elevated reporting limit due to high concentration of target compounds. MA CAM reporting limit not met.
S-15	Surrogate recovery outside of control limits due to suspected sample matrix interference. Chromatogram(s) is attached.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
MADEP EPH rev 2.1 in Soil	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
MADEP-VPH-Feb 2018 Rev 2.1 in Soil	
Unadjusted C5-C8 Aliphatics	CT,NC,ME,NH-P
C5-C8 Aliphatics	CT,NC,ME,NH-P
Unadjusted C9-C12 Aliphatics	CT,NC,ME,NH-P
C9-C12 Aliphatics	CT,NC,ME,NH-P
C9-C10 Aromatics	CT,NC,ME,NH-P
Benzene	CT,NC,ME,NH-P
Ethylbenzene	CT,NC,ME,NH-P
Methyl tert-Butyl Ether (MTBE)	CT,NC,ME,NH-P
Naphthalene	CT,NC,ME,NH-P
Toluene	CT,NC,ME,NH-P
m+p Xylene	CT,NC,ME,NH-P
o-Xylene	CT,NC,ME,NH-P
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Soil	
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA
SW-846 8260C-D in Soil	
Acetone	CT,NH,NY,ME
Acetone	CT,NH,NY,ME
Benzene	CT,NH,NY,ME
Benzene	CT,NH,NY,ME
Bromobenzene	NH,NY,ME
Bromobenzene	NH,NY,ME
Bromochloromethane	NH,NY,ME
Bromochloromethane	NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
sec-Butylbenzene	CT,NH,NY,ME

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C-D in Soil	
sec-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	NH,NY,ME
Dibromomethane	NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME
1,1-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C-D in Soil	
1,3-Dichloropropane	NH,NY,ME
1,3-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
1,4-Dioxane	NY
Ethylbenzene	CT,NH,NY,ME
Ethylbenzene	CT,NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
p-Isopropyltoluene (p-Cymene)	NH,NY
p-Isopropyltoluene (p-Cymene)	NH,NY
Methyl tert-Butyl Ether (MTBE)	NY
Methyl tert-Butyl Ether (MTBE)	NH,NY
Methylene Chloride	CT,NH,NY,ME
Methylene Chloride	CT,NH,NY,ME
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
Naphthalene	NH,NY,ME
Naphthalene	NH,NY,ME
n-Propylbenzene	NH,NY
n-Propylbenzene	NH,NY
Styrene	CT,NH,NY,ME
Styrene	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
1,2,3-Trichlorobenzene	ME
1,2,3-Trichlorobenzene	NY
1,2,4-Trichlorobenzene	NH,NY,ME
1,2,4-Trichlorobenzene	NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C-D in Soil	
1,1,2-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

21I0921

Pace Analytical®

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 2

Company Name: OTO
Address: 293 Bridge St
Phone: 413-788-6282
Project Name: Pole Levenitt
Project Location: Shutesbury
Project Number: 20160-OR-01
Project Manager: Mark O'Malley
Pace Quote Name/Number: —
Invoice Recipient: OTO
Sampled By: E. Escobar

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date 5day

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: OmalleyOto-env.com
Fax To #: eescobar@oto-env.com

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ●
NON SOXHLET X

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	EDB		VOC	PCB								[2] Preservation Code
1	B-1 (5-7)	9/16	0830	G	S	U	3	1				X		X	X								
2	B-2 (1-3)		0900	G	S	U		1				X			X								
3	B-3 (5-7)		0930	G	S	U	3	1				X		X	X								
4	B-4 (3-5)		1000	G	S	U		1				X			X								
5	B-5 (5-7)		1030	G	S	U	3	1				X		X	X								
6	B-6 (3-5)		1100	G	S	U		1				X			X								
7	B-7 (0-1)		1130	G	S	U		1				X			X								
8	B-8 (1-3)		1200	G	S	U		1				X			X								

Courier Use Only
Total Number Of:
VIALS
GLASS 11
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:	Client Comments:
Received by: (signature) Jon Crofters 1:45	Date/Time: 9/16/21 9.17.21	
Relinquished by: (signature) Jon Crofters 2:15	Date/Time: 9.17.21	
Received by: (signature) 2.8	Date/Time: 9/17 1415	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA GW-1
Other:

Special Requirements
☒ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

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

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. Th Chain of Custody is a legal document that must be complete and accurate and is used to determine wh analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pa Analytical values your partnership on each project and will try to assist with missing information, but w not be held accountable.

Table of Contents

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Company Name: OTO
Address: 293 Bridge
Phone: 413-788-1222
Project Name: 106 Everett
Project Location: Shutesbury
Project Number: 2020-02-01
Project Manager: Mark O'Malley
Pace Quote Name/Number: —
Invoice Recipient: OTO
Sampled By: E. Escobar

Requested Turnaround Time:
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date: 5-day

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To: omalley@oto-env.com
Fax To #: eescobar@oto-env.com

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☒

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	VPH	Hg	PCB	VOC
9	B-9(0-1)	9/16	1230	G	S	U		1						X	
10	B-9(8-10)	↓	1300	G	S	U	1	1				X		X	X
11	B-10(1-3)	↓	1200	G	S	U	3	1					X	X	X

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS 2
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:
	9/16/21
Received by: (signature) Jon Crofters 6:45	9.17.21
Relinquished by: (signature) Jon Crofters 2:15	9.17.21
Received by: (signature)	Date/Time: 9/17 1415
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments:

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☒ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

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

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. Th Chain of Custody is a legal document that must be complete and accurate and is used to determine wh analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pa Analytical values your partnership on each project and will try to assist with missing information, but w not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client OTO

Received By GR Date 9/17/21 Time 1415

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

By Gun # 2 Actual Temp - 2.8

Were samples within Temperature? 2-6°C T By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	11
Meoh-	5	250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-	8	Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

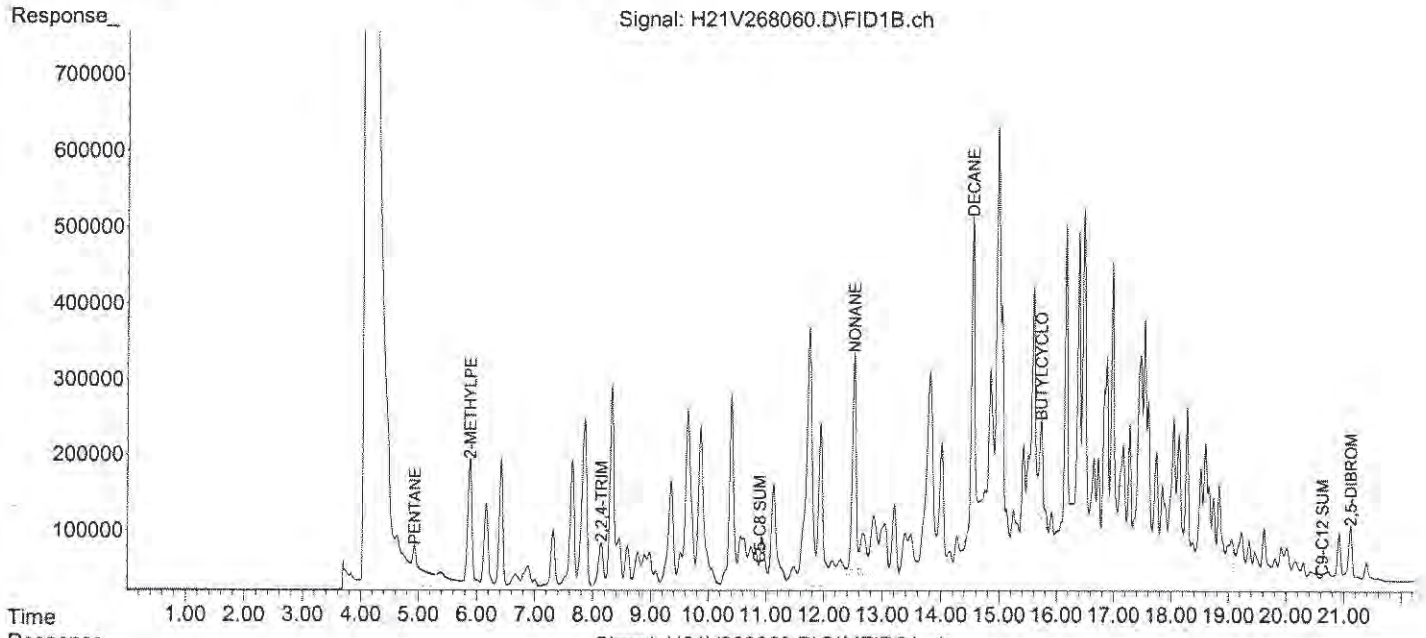
Comments:

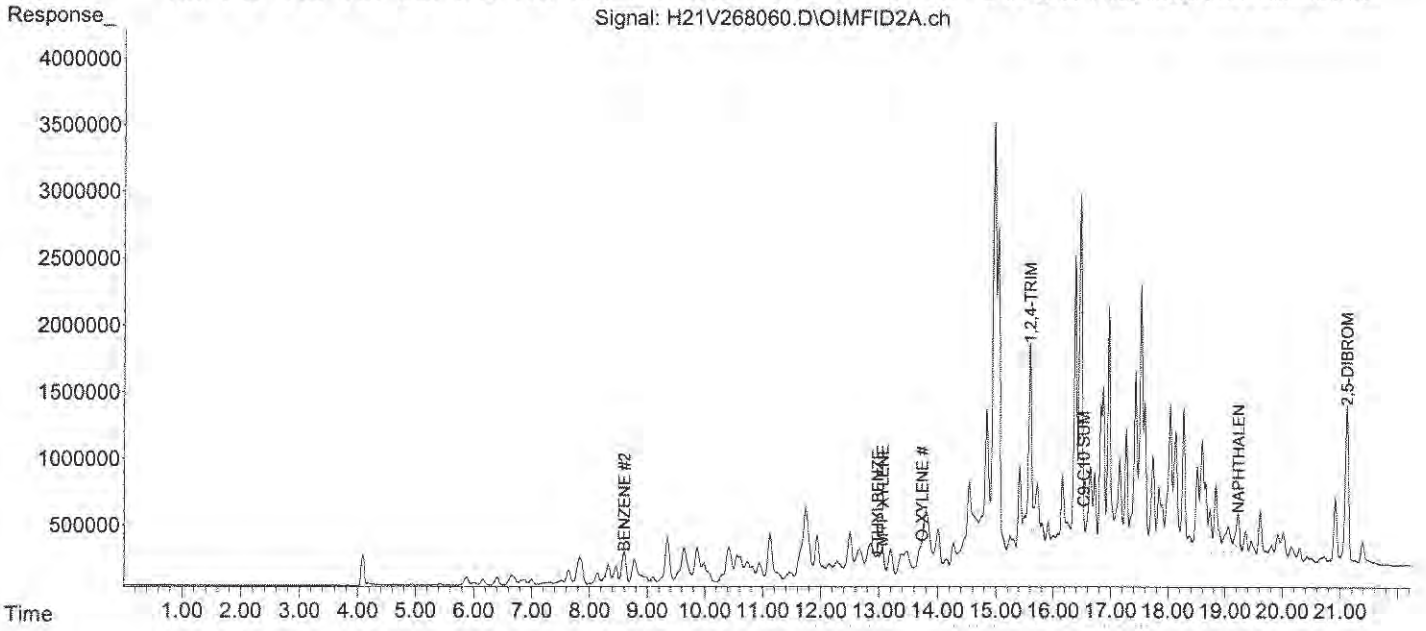
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\092021\
Data File : H21V268060.D
Signal(s) : Signal #1: FID1B.ch Signal #2: OIMFID2A.ch
Acq On : 21 Sep 2021 07:10 pm
Operator :
Sample : 21i0921-10 @ 100x meoh Inst : VPHGC3
Misc :
ALS Vial : 19 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 22 09:03:12 2021
Quant Method : C:\msdchem\1\methods\VN20421.M
Quant Title : VPHNEW
QLast Update : Mon Sep 20 15:42:15 2021
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ĀÀ ! " #Ā$ " #Ā%&'( )*+&'#Ā,)- . / #0 , 1. 2#$, 2)*3+&)*. %#4. 25

6&7.2&).2(#8&5,9 $.%:; ,<)=#&#"&+#%&'()*+&'#6&7.2&).2(	"2.>,+)#?9 JKELMJK
"2.>,+)#6.+&)*.%9 D-F),<7F2(=#ĀÀ	0; 89

;-*<#4.25#12.@*/,<#+,2)*3*+&)*.%<#3.2#)-,#3."A*%B#/&)&'#<)#9&7.2&).2(#D&51',#E #8F57,2G<HI

JKELMJK:LK#)-2F#JKELMJK:K

Ā&)2*+,<9## D.*'

CAM Protocol (check all that below)

NJOL#PQ$## $ĀĀ#EE#G#H	WXWLYWXWK#TĀ&#< !" #P"T## $ĀĀ#EEEZ##G#H	$ĀĀ#EP#G#H	NLNJ#"$Z### $ĀĀ#P#G#H	MLKX#)&'# $(&%*/,Y" Ā$# $ĀĀ#PE#G#H	ONOL# ",2+-'.2&),# $ĀĀ#PEEE#Z#G#H
NJWL#DPQ$# $ĀĀ#EE#Z##G#H	WLKL#Ā,)&'<## $ĀĀ#EEE#$##G#H	Ā&<< !" #P"T## $ĀĀ#EP#$#G#H	NLNK#",<)*+*/,<# $ĀĀ#P#Z#G#H	WKMO#T,V#$2### $ĀĀ#PE#Z#G#H	Ā&<< !" #Ā"T# $ĀĀ#ER#G#H
OLKL#Ā,)&'<## $ĀĀ#EE#G#H	OLJL#Ā,)&'<### $ĀĀ#EEE# #G#H	Ā&<< !" #!"T## $ĀĀ#EP#Z#GRH	NKSK#T,27*+*/,<# $ĀĀ#P#$#G#H	NUUL#!V1'.<*@,<# $ĀĀ#PE#G#H	;Q :KS#PQ$# $ĀĀ#ER#Z#G#H

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	], 2 #&''#&5 1', <#2 +, *@/ #'%&#+. % *)*. %#+. %<*<), %)#A*)- #)- . <, #,<+2*7,/#.%#)-,#$-&*%:.3:$F<)./(=# 12.1,2'(#12,<,2@,/#G*%+'F/*%B#),51,2&)F2,H#*%#)-,#3*,'/#.2#&'2(=#&%/#12,1&2,/Y&%&'(^,/#A*)-*%# 5,)-./#-.'/*%B#)*5,<_	☑ [, < ☐ 8 . \
B	], 2 #)- , #&%&'( )*+&'#5 ,)- . / G<H#&%/ #&''#&<<. +*&), / # $ #2, aF*2, 5 , %)<#<1,+*3*+,/#'%#)-,#<,',+),/#$ĀĀ# 12.).+.'G<H#3."A,/_	☑ [, < ☐ 8 . \
C	], 2 #&''#2, aF*2, / #+. 22, +)*@#&+)*. %<#&%/ #&%&'( )*+&'#2, <1. %<, #&+)*.%<#<1,+*3*,/#'%#)-,#<,',+),/#$ĀĀ# 12.).+.'G<H#*51',5,%),/#3.2#&"#*/,%)*3*,/#1,23.25&%+,#<)&%#&2/%:+.%3.25&%+,<_	☑ [, < ☐ 8 . \
D	.,<#)-,#'&7.2&).2(#2,1.2)#+.51'(#A*)-#&"#)-,#2,1.2)*%B#2,aF*2,%)<#<1,+*3*,/#'%#$ĀĀ#PĀE# `F&'*)(#Ā<<F2&%+,#&%/#`F&'*)(#$.%)2.'#bF*/'%,<#3.2#)-a#*<)*. %#&%#0 , 1. 2)*%B# 3Ā%&'( )*+&'# &)&_	☑ [, < ☐ 8 . \
E a	P"T=#!"T=#&%/#Ā"T#Ā,)-./<#.%'(9#] &<#,&+-#5,)-./#+.%/F+),/#A*)-. F)#<*B%*3*+&%)# 5./*3*+&)*.%G<H_#G0,3,2#).#)-,#'%/*@*/F&'#5,)-./G<H#3.2#&#B%)#3*+&%)#5./*3*+&)*.%<Hc	☑ [, < ☐ 8 . \
E b	Ā"T#&%/# Q:KS#Ā,)-./<#.%'(9#] &<#)-,#+.51',),#&%&'(),#'*<)#2,1.2,/#3.2#,&+-#5,)-./_	☐ [, < ☐ 8 . \
F	], 2 #&''#&11'*+&7', #$ĀĀ#12). +. '# $#&%/ #1, 23 25 &%+, #<)&%/ &2/ #% %+. %3 25 &%+, <#/ , %)*3, / #&%/ # ,@&'F&),/#'*%#&#'&7.2&).2(#%&22&%@F#G%B#&"#8.#2,<1.%#)-#`,<)*.%<Ā#)-2.FB-#!H_	☑ [, < ☐ 8 . \

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	], 2 #)- , #2, 1. 2)*%B#*5 *)<#&)# 2#7, '. A#&''#$ĀĀ#2, 1. 2)*%B#*5 *)<#<1,+*3*,/#'%#)-,#<,',+),/#$ĀĀ# 12.).+.'G<H_	☐ [, < ☑ 8.\

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	], 2 #&''# $#1, 23 5 &%+, #<)&%/ &2/ <#<1, +*3*, / #'%#)-, #$ĀĀ#12). +. 'G<H#&+-*,@,/_	☐ [, < ☑ 8.\
I	], 2 #2, <F')<#2, 1. 2), / #3 2#)- , #+. 5 1',), #&%&'( ), #'*<)#<1, +*3*, / #'%#)-,#<,',+),/#$ĀĀ#12.).+.'G<H_	☑ [, < ☐ 8 . \

All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

D*B%&)F2,9 lisa Worthington ".<*)*.%9 ;, +- %+&'#0 , 12, <, %&)*@

"2*%),/#8&5,9 6*<&Ā#c#] .2)-*%B).% &),9 LMYJUYJK

September 20, 2021

Mark O'Malley
OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103

Project Location: Shutesbury, MA
Client Job Number:
Project Number: 2060-02-01
Laboratory Work Order Number: 21I0388

Enclosed are results of analyses for samples received by the laboratory on September 9, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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Table of Contents (continued)

ÃÄ !"#$%& !'#&&' ( )*+' ,-./0&*1-23 45 67689 (: 5; <7Ã=>8>?@<6=A),B <7Ã=>8>?8ÃÃ8

OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103
ATTN: Mark O'Malley

REPORT DATE: 9/20/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2060-02-01

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21I0388

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-2D	21I0388-01	Ground Water		EPA 180.1	
				EPA 300.0	
				EPA 524.2	
				EPA 537.1	
				SM 9223B - COLILERT	
				SM21-23 2120B	
				SM21-23 4500 H B	
				SW-846 6010	
				SW-846 6010D	
				SW-846 8082A	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SM 9223B - COLILERT

Qualifications:

H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

Coliform, Total
21I0388-01[MW-2D]

E. Coli
21I0388-01[MW-2D]

SM21-23 4500 H B

Qualifications:

H-05

Holding time was exceeded. pH analysis should be performed immediately at time of sampling. Nominal 15 minute holding time was exceeded.

Analyte & Samples(s) Qualified:

pH
21I0388-01[MW-2D]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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 A. Worthington
Technical Representative

con-test® A Pace Analytical® Laboratory

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
N-EtFOSAA	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
N-MeFOSAA	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
11Cl-PF3OUdS (F53B Minor)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
9Cl-PF3ONS (F53B Major)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		EPA 537.1	9/13/21	9/17/21 12:20	BLH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	76.0	70-130		9/17/21 12:20
M3HFPO-DA	85.6	70-130		9/17/21 12:20
13C-PFDA	105	70-130		9/17/21 12:20
d5-NEtFOSAA	102	70-130		9/17/21 12:20

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	9/10/21	9/17/21 12:01	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	81.5	30-150		9/17/21 12:01
Decachlorobiphenyl [2]	79.4	30-150		9/17/21 12:01
Tetrachloro-m-xylene [1]	72.8	30-150		9/17/21 12:01
Tetrachloro-m-xylene [2]	69.0	30-150		9/17/21 12:01

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Iron	6.3	0.050	mg/L	1		SW-846 6010D	9/11/21	9/12/21 22:12	QNW
Manganese	0.11	0.010	mg/L	1		SW-846 6010D	9/11/21	9/12/21 22:12	QNW
Sodium	5.6	2.0	mg/L	1		SW-846 6010D	9/11/21	9/12/21 22:12	QNW
Hardness	20	1.4	mg/L	1		SW-846 6010	9/11/21	9/12/21 22:12	QNW

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Project Location: Shutesbury, MA
Sample Description:
Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D
Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Apparent Color	75	25	Color Units	5		SM21-23 2120B	9/9/21	9/9/21 9:34	LL
Chloride	1.2	1.0	mg/L	1		EPA 300.0	9/10/21	9/10/21 0:20	CB2
Coliform, Total	3.1	1.0	MPN/100 mL	1	H-03	SM 9223B - COLILERT	9/9/21	9/9/21 16:45	CB2
Nitrate as N	ND	0.10	mg/L	1		EPA 300.0	9/10/21	9/10/21 0:20	CB2
Nitrite as N	ND	0.100	mg/L	1		EPA 300.0	9/10/21	9/10/21 0:20	CB2
pH @20.1°C	6.9		pH Units	1	H-05	SM21-23 4500 H B	9/9/21	9/9/21 20:15	CB2
Turbidity	39	5.0	NTU	10		EPA 180.1	9/9/21	9/9/21 19:30	CB2
E. Coli	ND	1.0	MPN/100 mL	1	H-03	SM 9223B - COLILERT	9/9/21	9/9/21 16:45	CB2

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Drinking Water Organics EPA 500 Series Methods

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	10	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Benzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Bromobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Bromochloromethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Bromodichloromethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Bromoform	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Bromomethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
2-Butanone (MEK)	ND	5.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
tert-Butyl Alcohol (TBA)	ND	5.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
n-Butylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
sec-Butylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
tert-Butylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Carbon Disulfide	ND	5.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Carbon Tetrachloride	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Chlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Chloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Chloroform	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Chloromethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
2-Chlorotoluene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
4-Chlorotoluene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Dibromochloromethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Dibromomethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2-Dichlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,3-Dichlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,4-Dichlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1-Dichloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2-Dichloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1-Dichloroethylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
cis-1,2-Dichloroethylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
trans-1,2-Dichloroethylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2-Dichloropropane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,3-Dichloropropane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
2,2-Dichloropropane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1-Dichloropropene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
cis-1,3-Dichloropropene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,3-Dichloropropene (total)	ND	1.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Diethyl Ether	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Drinking Water Organics EPA 500 Series Methods

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Hexachlorobutadiene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
2-Hexanone (MBK)	ND	5.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Isopropylbenzene (Cumene)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Methylene Chloride	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
4-Methyl-2-pentanone (MIBK)	ND	5.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Naphthalene	ND	1.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
n-Propylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Styrene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Tetrachloroethylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Tetrahydrofuran	ND	2.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Toluene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2,3-Trichlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2,4-Trichlorobenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1,1-Trichloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1,2-Trichloroethane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Trichloroethylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Trichlorofluoromethane (Freon 11)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2,3-Trichloropropane	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,2,4-Trimethylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
1,3,5-Trimethylbenzene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Vinyl Chloride	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
m&p-Xylene	ND	1.0	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
o-Xylene	ND	0.50	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH
Xylenes (total)	ND	1.5	µg/L	1		EPA 524.2	9/14/21	9/14/21 10:35	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
4-Bromofluorobenzene	93.9	80-120		9/14/21 10:35	
1,2-Dichlorobenzene-d4	98.9	80-120		9/14/21 10:35	

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0388

Date Received: 9/9/2021

Field Sample #: MW-2D | Sampled: 9/8/2021 18:45

Sample ID: 21I0388-01

Sample Matrix: Ground Water

Tentatively Identified Compounds - EPA 500 Series Methods

Analyte	Results	Units	Response	RT	DF	CAS #	Q#	Method	Date Prepared	Date/Time Analyzed	Analyst
No TICs Found	0.0	µg/L			1			EPA 524.2	9/14/21	9/14/21 10:35	EEH

Sample Extraction Data

EPA 180.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289941	25.0	25.0	09/09/21

Prep Method: EPA 300.0 Analytical Method: EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289936	10.0	10.0	09/10/21

Prep Method: EPA 300.0 Analytical Method: EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B290007	10.0	10.0	09/10/21

Prep Method: EPA 524.2 Analytical Method: EPA 524.2

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B290133	5	5.00	09/14/21

Prep Method: EPA 537.1 Analytical Method: EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289995	253	1.00	09/13/21

SM 9223B - COLILERT

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289935	100	100	09/09/21

SM21-23 2120B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289909	50.0	50.0	09/09/21

SM21-23 4500 H B

Lab Number [Field ID]	Batch	Initial [mL]	Date
21I0388-01 [MW-2D]	B289943	50.0	09/09/21

Prep Method: SW-846 3005A Analytical Method: SW-846 6010

Lab Number [Field ID]	Batch	Initial [mL]	Date
21I0388-01 [MW-2D]	B290037	50.0	09/11/21

Sample Extraction Data

Prep Method: SW-846 3005A **Analytical Method: SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B290037	50.0	50.0	09/11/21

Prep Method: SW-846 3510C **Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0388-01 [MW-2D]	B289992	1020	10.0	09/10/21

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B289995 - EPA 537.1										
Blank (B289995-BLK1)				Prepared: 09/13/21 Analyzed: 09/16/21						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Minor)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Major)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*40.1*		ng/L	40.4		99.2	70-130			
Surrogate: M3HFPO-DA	*44.1*		ng/L	40.4		109	70-130			
Surrogate: 13C-PFDA	*42.7*		ng/L	40.4		106	70-130			
Surrogate: d5-NEtFOSAA	*161*		ng/L	162		99.6	70-130			
LCS (B289995-BS1)				Prepared: 09/13/21 Analyzed: 09/16/21						
Perfluorobutanesulfonic acid (PFBS)	8.01	2.0	ng/L	8.83		90.8	70-130			
Perfluorohexanoic acid (PFHxA)	9.06	2.0	ng/L	9.95		91.0	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.38	2.0	ng/L	9.10		81.1	70-130			
Perfluoroheptanoic acid (PFHpA)	8.45	2.0	ng/L	9.95		84.9	70-130			
Perfluorooctanoic acid (PFOA)	9.46	2.0	ng/L	9.95		95.0	70-130			
Perfluorooctanesulfonic acid (PFOS)	8.10	2.0	ng/L	9.24		87.7	70-130			
Perfluorononanoic acid (PFNA)	9.30	2.0	ng/L	9.95		93.4	70-130			
Perfluorodecanoic acid (PFDA)	9.67	2.0	ng/L	9.95		97.1	70-130			
N-EtFOSAA	9.18	2.0	ng/L	9.95		92.2	70-130			
Perfluoroundecanoic acid (PFUnA)	9.71	2.0	ng/L	9.95		97.6	70-130			
N-MeFOSAA	9.11	2.0	ng/L	9.95		91.6	70-130			
Perfluorododecanoic acid (PFDoA)	8.74	2.0	ng/L	9.95		87.8	70-130			
Perfluorotridecanoic acid (PFTrDA)	9.19	2.0	ng/L	9.95		92.4	70-130			
Perfluorotetradecanoic acid (PFTA)	8.83	2.0	ng/L	9.95		88.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.9	2.0	ng/L	9.95		120	70-130			
11Cl-PF3OUdS (F53B Minor)	8.88	2.0	ng/L	9.38		94.7	70-130			
9Cl-PF3ONS (F53B Major)	9.26	2.0	ng/L	9.29		99.7	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.38	2.0	ng/L	9.40		89.1	70-130			
Surrogate: 13C-PFHxA	*39.8*		ng/L	39.8		100	70-130			
Surrogate: M3HFPO-DA	*44.1*		ng/L	39.8		111	70-130			
Surrogate: 13C-PFDA	*40.8*		ng/L	39.8		102	70-130			
Surrogate: d5-NEtFOSAA	*154*		ng/L	159		96.8	70-130			

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B289992 - SW-846 3510C										
Blank (B289992-BLK1)				Prepared: 09/10/21 Analyzed: 09/11/21						
Aroclor-1016	ND	0.20	µg/L							
Aroclor-1016 [2C]	ND	0.20	µg/L							
Aroclor-1221	ND	0.20	µg/L							
Aroclor-1221 [2C]	ND	0.20	µg/L							
Aroclor-1232	ND	0.20	µg/L							
Aroclor-1232 [2C]	ND	0.20	µg/L							
Aroclor-1242	ND	0.20	µg/L							
Aroclor-1242 [2C]	ND	0.20	µg/L							
Aroclor-1248	ND	0.20	µg/L							
Aroclor-1248 [2C]	ND	0.20	µg/L							
Aroclor-1254	ND	0.20	µg/L							
Aroclor-1254 [2C]	ND	0.20	µg/L							
Aroclor-1260	ND	0.20	µg/L							
Aroclor-1260 [2C]	ND	0.20	µg/L							
Aroclor-1262	ND	0.20	µg/L							
Aroclor-1262 [2C]	ND	0.20	µg/L							
Aroclor-1268	ND	0.20	µg/L							
Aroclor-1268 [2C]	ND	0.20	µg/L							
Surrogate: Decachlorobiphenyl	*0.735*		µg/L	2.00		36.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.631*		µg/L	2.00		31.5	30-150			
Surrogate: Tetrachloro-m-xylene	*1.36*		µg/L	2.00		67.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.37*		µg/L	2.00		68.4	30-150			
LCS (B289992-BS1)				Prepared: 09/10/21 Analyzed: 09/12/21						
Aroclor-1016	0.45	0.20	µg/L	0.500		89.3	40-140			
Aroclor-1016 [2C]	0.40	0.20	µg/L	0.500		80.8	40-140			
Aroclor-1260	0.41	0.20	µg/L	0.500		81.3	40-140			
Aroclor-1260 [2C]	0.37	0.20	µg/L	0.500		74.0	40-140			
Surrogate: Decachlorobiphenyl	*1.52*		µg/L	2.00		75.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.37*		µg/L	2.00		68.7	30-150			
Surrogate: Tetrachloro-m-xylene	*1.53*		µg/L	2.00		76.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.42*		µg/L	2.00		71.0	30-150			
LCS Dup (B289992-BSD1)				Prepared: 09/10/21 Analyzed: 09/12/21						
Aroclor-1016	0.45	0.20	µg/L	0.500		89.3	40-140	0.0425	20	
Aroclor-1016 [2C]	0.41	0.20	µg/L	0.500		81.3	40-140	0.624	20	
Aroclor-1260	0.41	0.20	µg/L	0.500		81.2	40-140	0.140	20	
Aroclor-1260 [2C]	0.36	0.20	µg/L	0.500		72.1	40-140	2.68	20	
Surrogate: Decachlorobiphenyl	*1.31*		µg/L	2.00		65.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.19*		µg/L	2.00		59.5	30-150			
Surrogate: Tetrachloro-m-xylene	*1.52*		µg/L	2.00		75.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.42*		µg/L	2.00		70.9	30-150			

QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290037 - SW-846 3005A										
Blank (B290037-BLK1)				Prepared: 09/11/21 Analyzed: 09/12/21						
Iron	ND	0.050	mg/L							
Manganese	ND	0.010	mg/L							
Sodium	ND	2.0	mg/L							
Hardness	ND	1.4	mg/L							
LCS (B290037-BS1)				Prepared: 09/11/21 Analyzed: 09/12/21						
Iron	4.28	0.050	mg/L	4.00		107	80-120			
Manganese	0.532	0.010	mg/L	0.500		106	80-120			
Sodium	4.53	2.0	mg/L	4.00		113	80-120			
Hardness	28	1.4	mg/L	26.4		106	80-120			
LCS Dup (B290037-BSD1)				Prepared: 09/11/21 Analyzed: 09/12/21						
Iron	4.31	0.050	mg/L	4.00		108	80-120	0.755	20	
Manganese	0.537	0.010	mg/L	0.500		107	80-120	1.02	20	
Sodium	4.52	2.0	mg/L	4.00		113	80-120	0.254	20	
Hardness	28	1.4	mg/L	26.4		106	80-120	0.762	20	

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B289909 - SM21-23 2120B										
LCS (B289909-BS1)				Prepared & Analyzed: 09/09/21						
Apparent Color	15.0		Color Units	15.0		100	76-114			
Batch B289935 - SM 9223B - COLILERT										
Blank (B289935-BLK1)				Prepared & Analyzed: 09/09/21						
Coliform, Total	ND	1.0	MPN/100 mL							
E. Coli	ND	1.0	MPN/100 mL							
Batch B289936 - EPA 300.0										
Blank (B289936-BLK1)				Prepared & Analyzed: 09/09/21						
Nitrate as N	ND	0.10	mg/L							
Nitrite as N	ND	0.100	mg/L							
LCS (B289936-BS1)				Prepared & Analyzed: 09/09/21						
Nitrate as N	1.0	0.10	mg/L	1.00		104	90-110			
Nitrite as N	1.06	0.100	mg/L	1.00		106	90-110			
LCS Dup (B289936-BSD1)				Prepared & Analyzed: 09/09/21						
Nitrate as N	1.0	0.10	mg/L	1.00		104	90-110	0.385	20	
Nitrite as N	1.06	0.100	mg/L	1.00		106	90-110	0.0660	20	
Batch B289941 - EPA 180.1										
Blank (B289941-BLK1)				Prepared & Analyzed: 09/09/21						
Turbidity	ND	0.50	NTU							
LCS (B289941-BS1)				Prepared & Analyzed: 09/09/21						
Turbidity	4.1		NTU	4.00		102	90-110			
LCS Dup (B289941-BSD1)				Prepared & Analyzed: 09/09/21						
Turbidity	4.1		NTU	4.00		102	90-110	0.736	5	
Batch B289943 - SM21-23 4500 H B										
LCS (B289943-BS1)				Prepared & Analyzed: 09/09/21						
pH	5.99		pH Units	6.00		99.9	90-110			

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290007 - EPA 300.0										
Blank (B290007-BLK1)				Prepared & Analyzed: 09/09/21						
Chloride	ND	1.0	mg/L							
LCS (B290007-BS1)				Prepared & Analyzed: 09/09/21						
Chloride	10	1.0	mg/L	10.0		105	90-110			
LCS Dup (B290007-BSD1)				Prepared & Analyzed: 09/09/21						
Chloride	11	1.0	mg/L	10.0		105	90-110	0.0638	20	

QUALITY CONTROL

Drinking Water Organics EPA 500 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290133 - EPA 524.2										
Blank (B290133-BLK1)				Prepared & Analyzed: 09/14/21						
Acetone	ND	10	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	0.50	µg/L							
Bromobenzene	ND	0.50	µg/L							
Bromochloromethane	ND	0.50	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	0.50	µg/L							
Bromomethane	ND	0.50	µg/L							
2-Butanone (MEK)	ND	5.0	µg/L							
tert-Butyl Alcohol (TBA)	ND	5.0	µg/L							
n-Butylbenzene	ND	0.50	µg/L							
sec-Butylbenzene	ND	0.50	µg/L							
tert-Butylbenzene	ND	0.50	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	5.0	µg/L							
Carbon Tetrachloride	ND	0.50	µg/L							
Chlorobenzene	ND	0.50	µg/L							
Chloroethane	ND	0.50	µg/L							
Chloroform	ND	0.50	µg/L							
Chloromethane	ND	0.50	µg/L							
2-Chlorotoluene	ND	0.50	µg/L							
4-Chlorotoluene	ND	0.50	µg/L							
Dibromochloromethane	ND	0.50	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	0.50	µg/L							
1,2-Dichlorobenzene	ND	0.50	µg/L							
1,3-Dichlorobenzene	ND	0.50	µg/L							
1,4-Dichlorobenzene	ND	0.50	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	0.50	µg/L							
1,1-Dichloroethane	ND	0.50	µg/L							
1,2-Dichloroethane	ND	0.50	µg/L							
1,1-Dichloroethylene	ND	0.50	µg/L							
cis-1,2-Dichloroethylene	ND	0.50	µg/L							
trans-1,2-Dichloroethylene	ND	0.50	µg/L							
1,2-Dichloropropane	ND	0.50	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	0.50	µg/L							
1,1-Dichloropropene	ND	0.50	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	0.50	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
Ethylbenzene	ND	0.50	µg/L							
Hexachlorobutadiene	ND	0.50	µg/L							
2-Hexanone (MBK)	ND	5.0	µg/L							
Isopropylbenzene (Cumene)	ND	0.50	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	0.50	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	0.50	µg/L							
Methylene Chloride	ND	0.50	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	5.0	µg/L							
Naphthalene	ND	1.0	µg/L							

QUALITY CONTROL

Drinking Water Organics EPA 500 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290133 - EPA 524.2										
Blank (B290133-BLK1)				Prepared & Analyzed: 09/14/21						
n-Propylbenzene	ND	0.50	µg/L							
Styrene	ND	0.50	µg/L							
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	0.50	µg/L							
Tetrahydrofuran	ND	2.0	µg/L							
Toluene	ND	0.50	µg/L							
1,2,3-Trichlorobenzene	ND	0.50	µg/L							
1,2,4-Trichlorobenzene	ND	0.50	µg/L							
1,1,1-Trichloroethane	ND	0.50	µg/L							
1,1,2-Trichloroethane	ND	0.50	µg/L							
Trichloroethylene	ND	0.50	µg/L							
Trichlorofluoromethane (Freon 11)	ND	0.50	µg/L							
1,2,3-Trichloropropane	ND	0.50	µg/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	µg/L							
1,2,4-Trimethylbenzene	ND	0.50	µg/L							
1,3,5-Trimethylbenzene	ND	0.50	µg/L							
Vinyl Chloride	ND	0.50	µg/L							
m&p-Xylene	ND	1.0	µg/L							
o-Xylene	ND	0.50	µg/L							
Surrogate: 4-Bromofluorobenzene	*23.9*		µg/L	25.0		95.4	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	*25.2*		µg/L	25.0		101	80-120			
LCS (B290133-BS1)				Prepared & Analyzed: 09/14/21						
Acetone	100	10	µg/L	100		104	70-130			
tert-Amyl Methyl Ether (TAME)	11	0.50	µg/L	10.0		107	70-130			
Benzene	10	0.50	µg/L	10.0		101	70-130			
Bromobenzene	10	0.50	µg/L	10.0		100	70-130			
Bromochloromethane	11	0.50	µg/L	10.0		109	70-130			
Bromodichloromethane	11	0.50	µg/L	10.0		108	70-130			
Bromoform	12	0.50	µg/L	10.0		117	70-130			
Bromomethane	11	0.50	µg/L	10.0		105	70-130			
2-Butanone (MEK)	110	5.0	µg/L	100		109	70-130			
tert-Butyl Alcohol (TBA)	89	5.0	µg/L	100		89.0	70-130			
n-Butylbenzene	9.5	0.50	µg/L	10.0		95.2	70-130			
sec-Butylbenzene	9.6	0.50	µg/L	10.0		95.8	70-130			
tert-Butylbenzene	9.6	0.50	µg/L	10.0		95.9	70-130			
tert-Butyl Ethyl Ether (TBEE)	13	0.50	µg/L	10.0		130	70-130			
Carbon Disulfide	110	5.0	µg/L	100		107	70-130			
Carbon Tetrachloride	11	0.50	µg/L	10.0		106	70-130			
Chlorobenzene	10	0.50	µg/L	10.0		100	70-130			
Chloroethane	12	0.50	µg/L	10.0		118	70-130			
Chloroform	10	0.50	µg/L	10.0		105	70-130			
Chloromethane	8.9	0.50	µg/L	10.0		89.4	70-130			
2-Chlorotoluene	8.8	0.50	µg/L	10.0		88.3	70-130			
4-Chlorotoluene	9.6	0.50	µg/L	10.0		96.1	70-130			
Dibromochloromethane	11	0.50	µg/L	10.0		109	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	11	2.0	µg/L	10.0		107	70-130			
1,2-Dibromoethane (EDB)	11	0.50	µg/L	10.0		108	70-130			
Dibromomethane	10	0.50	µg/L	10.0		105	70-130			
1,2-Dichlorobenzene	9.9	0.50	µg/L	10.0		99.4	70-130			
1,3-Dichlorobenzene	10	0.50	µg/L	10.0		102	70-130			

QUALITY CONTROL

Drinking Water Organics EPA 500 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290133 - EPA 524.2										
LCS (B290133-BS1)				Prepared & Analyzed: 09/14/21						
1,4-Dichlorobenzene	9.9	0.50	µg/L	10.0		99.1	70-130			
Dichlorodifluoromethane (Freon 12)	10	0.50	µg/L	10.0		103	70-130			
1,1-Dichloroethane	10	0.50	µg/L	10.0		103	70-130			
1,2-Dichloroethane	10	0.50	µg/L	10.0		105	70-130			
1,1-Dichloroethylene	10	0.50	µg/L	10.0		103	70-130			
cis-1,2-Dichloroethylene	10	0.50	µg/L	10.0		104	70-130			
trans-1,2-Dichloroethylene	9.9	0.50	µg/L	10.0		99.4	70-130			
1,2-Dichloropropane	10	0.50	µg/L	10.0		104	70-130			
1,3-Dichloropropane	11	0.50	µg/L	10.0		106	70-130			
2,2-Dichloropropane	12	0.50	µg/L	10.0		118	70-130			
1,1-Dichloropropene	10	0.50	µg/L	10.0		100	70-130			
cis-1,3-Dichloropropene	11	0.50	µg/L	10.0		107	70-130			
trans-1,3-Dichloropropene	11	0.50	µg/L	10.0		115	70-130			
Diethyl Ether	10	0.50	µg/L	10.0		103	70-130			
Diisopropyl Ether (DIPE)	10	0.50	µg/L	10.0		102	70-130			
Ethylbenzene	9.8	0.50	µg/L	10.0		97.6	70-130			
Hexachlorobutadiene	10	0.50	µg/L	10.0		102	70-130			
2-Hexanone (MBK)	110	5.0	µg/L	100		112	70-130			
Isopropylbenzene (Cumene)	9.6	0.50	µg/L	10.0		96.5	70-130			
p-Isopropyltoluene (p-Cymene)	9.7	0.50	µg/L	10.0		96.6	70-130			
Methyl tert-Butyl Ether (MTBE)	11	0.50	µg/L	10.0		112	70-130			
Methylene Chloride	10	0.50	µg/L	10.0		100	70-130			
4-Methyl-2-pentanone (MIBK)	110	5.0	µg/L	100		110	70-130			
Naphthalene	7.7	1.0	µg/L	10.0		77.3	70-130			
n-Propylbenzene	9.7	0.50	µg/L	10.0		96.6	70-130			
Styrene	10	0.50	µg/L	10.0		99.6	70-130			
1,1,1,2-Tetrachloroethane	11	0.50	µg/L	10.0		108	70-130			
1,1,2,2-Tetrachloroethane	11	0.50	µg/L	10.0		106	70-130			
Tetrachloroethylene	11	0.50	µg/L	10.0		106	70-130			
Tetrahydrofuran	11	2.0	µg/L	10.0		110	70-130			
Toluene	9.9	0.50	µg/L	10.0		99.4	70-130			
1,2,3-Trichlorobenzene	8.8	0.50	µg/L	10.0		88.1	70-130			
1,2,4-Trichlorobenzene	8.9	0.50	µg/L	10.0		89.0	70-130			
1,1,1-Trichloroethane	10	0.50	µg/L	10.0		103	70-130			
1,1,2-Trichloroethane	11	0.50	µg/L	10.0		106	70-130			
Trichloroethylene	10	0.50	µg/L	10.0		100	70-130			
Trichlorofluoromethane (Freon 11)	11	0.50	µg/L	10.0		107	70-130			
1,2,3-Trichloropropane	10	0.50	µg/L	10.0		103	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11	0.50	µg/L	10.0		108	70-130			
1,2,4-Trimethylbenzene	9.8	0.50	µg/L	10.0		98.2	70-130			
1,3,5-Trimethylbenzene	9.7	0.50	µg/L	10.0		96.8	70-130			
Vinyl Chloride	8.0	0.50	µg/L	10.0		79.9	70-130			
m&p-Xylene	20	1.0	µg/L	20.0		98.0	70-130			
o-Xylene	10	0.50	µg/L	10.0		101	70-130			
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.3	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	*24.9*		µg/L	25.0		99.7	80-120			

QUALITY CONTROL

Tentatively Identified Compounds - EPA 500 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290133 - EPA 524.2										
Blank (B290133-BLK1)				Prepared & Analyzed: 09/14/21						
No TICs Found	0.0		µg/L							

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B289992-BS1 Date(s) Analyzed: 09/12/2021 09/12/2021

Instrument ID (1): ECD 9 Instrument ID (2): ECD 9

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.45	
	2	0.000	0.000	0.000	0.40	11.8
Aroclor-1260	1	0.000	0.000	0.000	0.41	
	2	0.000	0.000	0.000	0.37	10.3

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B289992-BSD1 Date(s) Analyzed: 09/12/2021 09/12/2021

Instrument ID (1): ECD 9 Instrument ID (2): ECD 9

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.45	
	2	0.000	0.000	0.000	0.41	9.3
Aroclor-1260	1	0.000	0.000	0.000	0.41	
	2	0.000	0.000	0.000	0.36	13.0

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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
H-03	Sample received after recommended holding time was exceeded.
H-05	Holding time was exceeded. pH analysis should be performed immediately at time of sampling. Nominal 15 minute holding time was exceeded.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 180.1 in Water	
Turbidity	NC,NY
EPA 300.0 in Water	
Chloride	NC,NY,MA,VA,ME,NH,CT,RI
Nitrate as N	NC,NY,MA,VA,ME,NH,CT,RI
Nitrite as N	NY,NC,NH,VA,ME,CT,RI
EPA 524.2 in Drinking Water	
Benzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Bromobenzene	CT,MA,NH,NY,RI,VT-DW
Bromochloromethane	CT,MA,NH,NY,RI,VT-DW
Bromodichloromethane	MA,NH,NY,RI,ME,VA,VT-DW
Bromoform	CT,MA,NH,NY,RI,ME,VT-DW
Bromomethane	CT,MA,NH,NY,RI,VT-DW
n-Butylbenzene	CT,MA,NH,NY,RI,VT-DW
sec-Butylbenzene	CT,MA,NH,NY,RI,VT-DW
tert-Butylbenzene	CT,MA,NH,NY,RI,VT-DW
Carbon Tetrachloride	CT,MA,NH,NY,RI,ME,VA,VT-DW
Chlorobenzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Chloroethane	CT,MA,NH,NY,RI,VT-DW
Chloroform	MA,NH,NY,RI,ME,VA,VT-DW
Chloromethane	CT,MA,NH,NY,RI,VT-DW
2-Chlorotoluene	CT,MA,NH,NY,RI,VT-DW
4-Chlorotoluene	CT,MA,NH,NY,RI,VT-DW
Dibromochloromethane	MA,NH,NY,RI,ME,VA,VT-DW
Dibromomethane	CT,MA,NH,NY,RI,VT-DW
1,2-Dichlorobenzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,3-Dichlorobenzene	CT,MA,NH,NY,RI,VT-DW
1,4-Dichlorobenzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Dichlorodifluoromethane (Freon 12)	CT,MA,NH,NY,RI,VT-DW
1,1-Dichloroethane	CT,MA,NH,NY,RI,VT-DW
1,2-Dichloroethane	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,1-Dichloroethylene	CT,MA,NH,NY,RI,ME,VA,VT-DW
cis-1,2-Dichloroethylene	CT,MA,NH,NY,RI,ME,VA,VT-DW
trans-1,2-Dichloroethylene	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,2-Dichloropropane	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,3-Dichloropropane	CT,MA,NH,NY,RI,VT-DW
2,2-Dichloropropane	CT,MA,NH,NY,RI,VT-DW
1,1-Dichloropropene	CT,MA,NH,NY,RI,VT-DW
cis-1,3-Dichloropropene	CT,MA,NH,NY,RI,VT-DW
trans-1,3-Dichloropropene	CT,MA,NH,NY,RI,VT-DW
1,3-Dichloropropene (total)	CT,MA
Ethylbenzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Hexachlorobutadiene	CT,MA,NH,NY,RI,VT-DW
Isopropylbenzene (Cumene)	CT,MA,NH,NY,RI,VT-DW
p-Isopropyltoluene (p-Cymene)	CT,MA,NH,NY,RI,VT-DW
Methyl tert-Butyl Ether (MTBE)	CT,MA,NH,NY,RI,ME,VT-DW
Methylene Chloride	CT,MA,NH,NY,RI,ME,VA,VT-DW

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 524.2 in Drinking Water	
Naphthalene	NY
n-Propylbenzene	NY,VT-DW
Styrene	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,1,1,2-Tetrachloroethane	CT,MA,NH,NY,RI,VT-DW
1,1,2,2-Tetrachloroethane	CT,MA,NH,NY,RI,VT-DW
Tetrachloroethylene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Toluene	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,2,3-Trichlorobenzene	CT,MA,NH,NY,RI,VT-DW
1,2,4-Trichlorobenzene	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,1,1-Trichloroethane	CT,MA,NH,NY,RI,ME,VA,VT-DW
1,1,2-Trichloroethane	CT,MA,NH,NY,RI,ME,VA,VT-DW
Trichloroethylene	CT,MA,NH,NY,RI,ME,VA,VT-DW
Trichlorofluoromethane (Freon 11)	CT,MA,NH,NY,RI,VT-DW
1,2,3-Trichloropropane	CT,MA,NH,NY,RI,VT-DW
1,2,4-Trimethylbenzene	CT,MA,NH,NY,RI,VT-DW
1,3,5-Trimethylbenzene	CT,MA,NH,NY,RI,VT-DW
Vinyl Chloride	CT,MA,NH,NY,RI,ME,VA,VT-DW
m&p-Xylene	VA
o-Xylene	VA
Xylenes (total)	CT,MA,NH,NY,RI,ME,VA,VT-DW
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,NY,NH,MA
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,NY,NH,MA
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
11Cl-PF3OUdS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
9Cl-PF3ONS (F53B Major)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME,PA,MI,MA
SM 9223B - COLILERT in Water	
E. Coli	MA,CT,RI
SM21-23 2120B in Drinking Water	
Apparent Color	CT,NH,NY,ME,VA
SM21-23 4500 H B in Water	
pH	CT,MA,RI

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 6010 in Water	
Hardness	CT,MA,NH,NY
SW-846 6010D in Water	
Iron	CT,NH,NY,ME,VA,NC
Manganese	CT,NH,NY,ME,VA,NC
Sodium	CT,NH,NY,ME,VA,NC
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

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Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	OTO Associates
Address:	293 Bridge St Suite 500 Springfield MA
Phone:	413-788-6222
Project Name:	66 Leverett Rd
Project Location:	Shutesbury, MA
Project Number:	2060-02-01
Project Manager:	Mark O'Malley
Pace Quote Name/Number:	
Invoice Recipient:	OTO
Sampled By:	Mark O'Malley

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☑ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: omalley@oto-env.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☑

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	O PFAS 537.1	H VOCs+TICs 524.2	I PCBs 8082	I Coliform SM9223	I NO3	F pH, color, turbidity	F Hardness	I Chloride	N Fe	N Mn	N Na
1	MW-2D	1845	1845	G	GW	C	2	2	3	1		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	FRB	1900	1900	G	GW	C	0		1													
3	Duplicate	1850	1850	G	GW	C	2		1													
4	Trip Blank	—	—	Grab	GW	C	1															

Hold

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Pace Analytical is not responsible for missing samples from prepacked coolers

Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Courier Use Only

[2] Preservation Code

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define) TR2

Relinquished by: (signature)	Mark O'Malley	Date/Time: 9/9/21 830
Received by: (signature)	MO	Date/Time: 9/9/21 830
Relinquished by: (signature)		Date/Time:
Received by: (signature)		Date/Time:
Relinquished by: (signature)		Date/Time:
Received by: (signature)		Date/Time:
Relinquished by: (signature)		Date/Time:
Received by: (signature)		Date/Time:

Client Comments:

Detection Limit Requirements
MA: RCS-1
CT:
Other:

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

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

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☑ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Comments:
per client run bacteria past hold. JLH 9/9/2021

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client OTO

Received By MP Date 01/01 Time 8:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 4.4

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? Frank

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? MFT On COC? T

Do all samples have the proper pH? Acid pH<2 Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	2	1 Liter Plastic	1	16 oz Amb.	
HCL-	5	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	4	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria	1	2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

ĀÀ ! " #Ā$ " #À%&'( )*+&'#Ā,)- . / #0, 1. 2#$, 2)*3+&)*. %#4. 25

6&7.2&).2(#8&5,9 $.%:; ,<)=#&#"&+/#%&'()*+&'#6&7.2&).2(	"2.>,+)#?9 JKELMNN
"2.>,+)#6.+&)*.%9 D-F),<7F2(=#ĀÀ	0; 89

;-*<#4.25#12.@*/,<#+,2)*3*+&)*.%<#3.2#)-,#3.".A*%B#/&)&'#<)#6&7.2&).2(#D&51',#E #8F57,2G<HI

JKELMNN:LK#)-2F#JKELMNN:LJ

Ā&)2*+,<9## O&), 2

CAM Protocol (check all that below)

NJPL#QR$## $ÀĀ#EÈÀ#G#H	VWVLXVWVK#TBĀ#& $ĀĀ#EEEY##G#H	Ā&<< !" #Q"T## $ÀĀ#EQÀ#G#H	NLNJ#"$Y### $ÀĀ#Q#À#G[H	ZLKW(#)&'# $(&%*/,X" À$# $ÀĀ#QEÀ#G#H	PNPL# ",2+-'.2&),# $ÀĀ#QEEE#Y#G#H
NJVL#DQR$# $ÀĀ#EE#Y##G#H	VLKL#Ā,)&'<## $ÀĀ#EEE#$##G#H	Ā&<< !" #Q"T## $ÀĀ#EQ#$#G#H	NLNK#",<)*+*/,<# $ÀĀ#Q#Y#G#H	VKZP#T,U#$2### $ÀĀ#QE#Y#G#H	Ā&<< !" #À"T# $ÀĀ#E[#À#G#H
PLKL#Ā,)&'<## $ÀĀ#EEÀ#G#H	PLJL#Ā,)&'<### $ÀĀ#EEE# #G#H	Ā&<< !" #!"T## $ÀĀ#EQ#Y#G#H	NKSK#T,27*+*/,<# $ÀĀ#Q#$#G#H	NMML#!U1'.<*@,<# $ÀĀ#QEÀ#G#H	;R :KS#QR$# $ÀĀ#E[#Y#G#H

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	O, 2, #&''#&5 1', <#2, +, *@/ #'%&#+. % *)*. %#+. %<*<), %)#A*)- #)- . <, #,<+2*7,/#.%#)-,#$-&*%:.3:$F<)./(=# 12.1,2'(#12,<,2@,/#G*%+'F/*%B#),51,2&)F2,H#*%#)-,#3*,'/#.2#&'2(=#&%/#12,1&2,/X&%&'(^,/#A*)-*%# 5,)-./#-.'/*%B#)*5,<_	☑ \, < ☐ 8 .]
B	O, 2, #)- , #&%&'( )*+&'#5 ,)- . / G<H#&%/ #&''#&<<. +*&), / # $ #2, aF*2, 5 , %)<#<1,+*3*+,/#*%#)-,#<,',+),/#$ÀĀ# 12.).+.'G<H#3.".A,/_	☑ \, < ☐ 8 .]
C	O, 2, #&''#2, aF*2, / #+. 22, +)*@#&+)*. %<#&%/ #&%&'( )*+&'#2, <1. %<, #&+)*.%<#<1,+*3*,/#*%#)-,#<,',+),/#$ÀĀ# 12.).+.'G<H#*51',5,%),/#3.2#&"#*/,%)*3*,/#1,23.25&%+,#<)&%#&2/%:+.%3.25&%+,<_	☑ \, < ☐ 8 .]
D	.,<#)-,#'&7.2&).2(#2,1.2)#+.51'(#A*)-#&"#)-,#2,1.2)*%B#2,aF*2,%)<#<1,+*3*,/#*%#$ÀĀ#Q<E## `F&'*)(#Ā<<F2&%+,#&%/#`F&'*)(#$.%)2.'#bF*/*%,<#3.2#)-a#*<)*. %#&%/ #0, 1. 2)*%B# 3Ā%&'( )*+&'# &)&_	☑ \, < ☐ 8 .]
E a	Q"T=#!"T=#&%/#Ā"T#Ā,)-./<#.%'(9#O &<#,&+-#5,)-./#+.%/F+),/#A*)-. F)#<*B%*3*+&%)# 5./*3*+&)*.%G<H_#G0,3,2#).#)-,#*%/*@*/F&'#5,)-./G<H#3.2#&#B%)#3*+&%)#5./*3*+&)*.%<Hc	☐ \, < ☐ 8 .]
E b	Ā"T#&%/# R:KS#Ā,)-./<#.%'(9#O &<#)-,#+.51',),#&%&'(),#'*<)#2,1.2,/#3.2#,&+-#5,)-./_	☐ \, < ☐ 8 .]
F	O, 2, #&''#&11'*+&7', #$ ÀĀ#12). +. '# $#&%/ #1, 23 25 &%+, #<)&%/ &2/ #% %+. %3 25 &%+, <#/ , %)*3, / #&%/ # ,@&'F&),/#*%#&#'&7.2&).2(#%&22&%@F#G%B#&"#8.#2,<1.%#),<#`,<)*.%<#Ā#)-2.FB-#!H_	☑ \, < ☐ 8 .]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	O, 2, #)- , #2, 1. 2)*%B#*5 *)<#&)# 2#7, '. A#&''#$ ÀĀ#2, 1. 2)*%B#*5 *)<#<1,+*3*,/#*%#)-,#<,',+),/#$ÀĀ# 12.).+.'G<H_	☑ \, < ☐ 8.]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	O, 2, #&''# $#1, 23 5 &%+, #<)&%/ &2/ <#<1, +*3*, / #%#)-, #$ ÀĀ#12). +. 'G<H#&+-*,@,/_	☐ \, < ☑ 8.]
I	O, 2, #2, <F')<#2, 1. 2), / #3 2#)-, #+. 5 1',), #&%&'( ), #*<)#<1, +*3*, / #%#)-,#<,',+),/#$ÀĀ#12.).+.'G<H_	☑ \, < ☐ 8 .]

] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

D*B%&)F2,9 lisa Worthington ".<*)*.%9 ;, +- %+&'#0, 12, <, %&)*@

"2*%),/#8&5,9 6*<&#c#O2)-*%B).% &),9 LZXJLXJK

APPENDIX E

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

GROUNDWATER SAMPLING RECORD

PROJECT: 1 Cooleyville Rd - 66 Leverett Rd. *PROJECT NO.:* 2060-02-01
CITY/STATE: Shutesbury, MA
SAMPLING PERSONNEL: Mark O'Malley
DATE: 9/8/21 *WEATHER:* Sunt clouds 70s
SAMPLE DESIGNATION: MW-2D *SAMPLING SEQUENCE No.* 1 of 1
PURGE METHOD: BAILER / PUMP - LOW or HIGH FLOW ? / OTHER
METHOD: BAILER / PERISTALTIC PUMP / DOWNHOLE PUMP / OTHER

WELL DATA
MEASURING POINT: Top of: PVC / Curb box / Protective pipe / Other:
Vertical distance from measuring point to ground surface: ~2' above / below grade
WELL DIAMETER: 6" *DEPTH TO WATER:* 9.86 *TOTAL DEPTH:* 100
STANDING WATER(ft): ~90 *ONE VOLUME = (gal):* ~132
INTAKE DEPTH(ft): ~50-60
CONDITION OF WELL: Good / unlocked / standing water in annulus / other:
RECHARGE RATE: Slow / Moderate / Fast

WATER DATA
APPEARANCE: Clear / cloudy / silty / sheen / floating product / other: faint orange tint
ODOR: None / Petroleum / Other (describe):

Time	1815	1820	1825	1830	1835	1840	1845
Depth to water	10.84	10.85	10.85	10.85	10.85	10.85	10.86
Cum. purge volume	~420	~437	454	471	488	505	522
Temp (°C)	12.0	11.8	11.0	10.8	10.8	10.8	10.6
Dissolved O_2 (mg/l)	2.17	1.74	1.76	1.74	1.62	1.84	1.73
Cond'y (umho/cm)	70.6	70.1	69.5	69.2	69.0	68.9	68.8
pH (S.U.)	7.55	7.43	7.43	7.45	7.44	7.44	7.44
ORP/other:	55.5	47.6	35.9	35.9	38.2	39.2	39.6
Turbidity	66.1	20.5	16.7	15.9	19.8	26.7	23.8

Low Sunlight

SAMPLE BOTTLES: FILTRATION?: YES / NO. If yes, pore size: 0.45 micron / other

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
See chain	Various	See chain
PFAS	↓	↓
PCBs		
VOCs		
Potability		

NOTES AND OBSERVATIONS:
begin purging @ 1610 @ 3 to 4 gal/minute Sample @ 1845
High Turbidity / Pump silted / bacteria upon removal
FRB 1900
Duplicate 1850

MEMORANDUM

Date: 21 January 2022

To: Mr. Gary Morin, P.E. & Ms. Heather Sullivan (USACE CENAE)

From: Mr. Michael Kulbersh, PG/LSP & Dr. Yixian Zhang (USACE CENAE)

Subject: Shutesbury - Westover Remote Site: Terminal VHF Omni-Range Facility (TVOR) by Westover AFB

Purpose:

The purpose of this memorandum is to briefly summarize the underground storage tank (UST) removal efforts completed at the subject project site by the US Army Corps of Engineers, New England District (USACE) in 1994 and 1995, and a subsequent limited subsurface investigation conducted on-behalf of the Town of Shutesbury (Town) in the area of the UST resulting in a potential reporting condition to the Massachusetts Department of Environmental Protection. Section 1. provides more detail on the activities completed at the site by USACE and the Town. Section 2. outlines potential data quality issues that were identified by (USACE), as a result of reviewing the Town's contractor's analytical data. Section 3. provides a conclusion.

1. Introduction:

The Westover Terminal VHF Omni-Range (TVOR) facility site was formerly located in Shutesbury, MA. The United States leased the Site along with leaseholds/purchase on other surrounding land in 1957. The Air Force constructed a circular concrete TVOR pad with tower and an Emergency Power Unit Shelter (4'x8') at the site and an associated underground fuel storage tank. Thirty-five wooden posts in a 100-foot radius around the TVOR pad were constructed to be used in conjunction with the TVOR facility to affect the transmission. The Air Force used the site until 1967; the leaseholds were not extended beyond June 1967. In 1992, the Department of Defense Installation Restoration Program (IRP) Formerly Used Defense Site Program recommended to remove one 275-gallon gasoline UST, contents, piping and any contaminated soil were slated for removal. Based on photologs, the tank was excavated on 14 September 1994, and soil was removed from the tank grave on approximately 26 September 1994. A total of 11.5 tons of petroleum impacted soil was removed and two confirmation soil samples were collected. One sample contained petroleum hydrocarbons at 145 mg/Kg (TV02) and TV01 contained 67.3 mg/Kg. Based on pay estimate sheets, an additional 89.78 tons of petroleum impacted soils were subsequently removed. Confirmatory soil samples collected on 5 January 1995, presumably following the removal of the approximately 90 tons of soil contained TPH at 94.9 mg/Kg TPH with a duplicate result 69.5 mg/Kg.

O'Reilly, Talbot & Okun Associates, Inc. (OTO) of on behalf of the Town, conducted a limited subsurface assessment at the above referenced property. On 16 September 2021, Martin Geo/Environmental, LLC and OTO performed ten soil borings (B-1 through B-10) using a direct-push drill rig. OTO logged the borings, field screened soil samples with a photoionization detector (PID) and retained soil samples for laboratory analysis. Sample location B-9 (**Figure 1**) was collected within the former tank grave of the 275-gallon gasoline UST. The sample collected from 8-10 feet below ground surface was analyzed for Volatile Petroleum Hydrocarbons (VPH), VOCs, and PCBs. The VPH results contained C5-C8 aliphatic hydrocarbons at 100 mg/Kg, exactly at the RCS-1 reporting concentration under the Massachusetts Contingency Plan (MCP) (**Table 1**).

The OTO report stated "*pursuant to 310 CMR 40.0315(3), the concentration of C5-C8 aliphatic hydrocarbon detected in soil at boring B-9 is a condition which requires release notification to MassDEP. The hydrocarbon profile detected is consistent with impacts frequently associated with releases of gasoline. Under the MCP at 310 CMR 40.0315, persons required to notify under 310 CMR 40.0331 shall inform MassDEP within 120 days after obtaining knowledge of a release to the environment indicated by the measurement of oil in soil in an amount equal to or greater than the applicable Reportable Concentration listed at 310 CMR 40.1600. We recommend providing notice to MassDEP on or before January 28, 2022, based on the date of receipt of the laboratory report. Further assessment is warranted to evaluate the source, nature, and extent of the release detected at boring B-9.*"

Figure 1- Location of TVOR Site and Soil Boring B-9

Table 1
Soil Analytical Results
Volatile Petroleum Hydrocarbons (VPH)
Concentrations in mg/kg
66 Leverett Road
Shutesbury, Massachusetts

Sample No.:	B-9	Reportable Conc. RCS-1
Depth (feet):	8-10'	
Date Collected:	9/16/21	
PID Reading (ppmv):	780	NA
VPH Fractions		
C5-C8 Aliphatics	**100**	100
C9-C12 Aliphatics	89	1,000
C9-C10 Aromatics	66	100
VPH Target Compounds		
Benzene	0.3	2
Ethylbenzene	0.18	40
Methyl tert-butyl ether	<0.085	0.1
Naphthalene	0.54	4
Toluene	<0.085	30
Xylenes (total)	0.48	100
VOCs by 8260		
n-Butylbenzene	1.2	NS
sec-Butylbenzene	0.28	NS
Isopropylbenzene	0.25	1,000
n-Propylbenzene	1.6	100
1,2,4-Trimethylbenzene	2.1	1,000
1,3,5-Trimethylbenzene	3.2	10

NOTES:

1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. "PID"=Photoionization detector soil headspace measurement in
5. Only analytes detected in at least one sample are shown; refer to laboratory reports for full analyte listing.
6. Values shown in **bold** are equal to or exceed Reportable Concentrations.

2. Potential Data Quality Issue:

As indicated in the MADEP MCP Analytical Method Report Certification Form (page 1 - **Attachment A)** contained in the report prepared by OTO, the laboratory indicated that not all QC performance standards specified in the Compendium of Analytical Methods (CAM) protocols were achieved. Given that the concentration of the C5-C8 aliphatic carbon fraction was detected exactly at the RCS-1 reporting concentration of 100 mg/Kg, Mr. Kulbersh (USACE Geologist and Licensed Site Professional (MA License # 1203)), requested that Dr. Zhang, USACE Chemist, further evaluate the data package to identify what were the QC performance standards that were not achieved. As part of her review, Dr. Zhang noted the following for the VPH data associated with sample B-9 (8-10 feet bgs). Dr. Zhang found two data quality issues as described below:

1) Field sample preservation did not meet method requirement: the MADEP VPH method requires that soil samples for VPH analysis be preserved in the field at a soil/sediment-to-methanol ratio of 1 gram soil/sediment to 1 mL methanol ±25%. The case narrative of the lab report (page 2 in **Attachment A**) states *"Soil/methanol ratio does not meet method specifications. Excess amount of soil. Sample was completely covered with methanol, but with less than the method-specified amount."* Because field sample preservation did not meet the method requirement in this sample, the quality of the VPH data may have been impacted.

2) Surrogate recoveries exceeded method acceptance limits: the case narrative also states *"Surrogate recovery outside of control limits due to suspected sample matrix interference. Chromatogram(s) is attached."* As indicated in the VPH result page for sample B-9 (8-10) (page 3 – **Attachment A**), recoveries of surrogates 2,5-dibromotoluene (FID) and 2,5-dibromotoluene (PID) were both above the method acceptance limits (70%-130%) at 136% and 131%, respectively. The high surrogate recoveries indicate that the VPH results in the sample may have a high bias (i.e., reported results are higher than the actual results). Because the 100 mg/kg C5-C8 Aliphatics was just at the MA Reportable Concentration of 100 mg/kg, the high bias suggests that the actual C5-C8 Aliphatics concentration in sample B-9 (8-10) may be below the 100 mg/kg MA Reportable Concentration. The VPH chromatogram is included as page 4 in **Attachment A**.

Mr. Kulbersh subsequently contacted Mr. John Fitzgerald of the MassDEP Northeast Regional office (NERO), an expert on the reDUA (Representative Evaluation and Data Useability Analysis) process used in the MCP (310 CMR 40.1056(2)(k) on 19 January 2022. Mr. Fitzgerald indicated the Data Useability Assessment is not necessarily required as part of the notification process; however valid data is required. Mr. Kulbersh indicated that the surrogate recoveries were over the acceptance range. Mr. Fitzgerald suggested that since a sample was also tested for Volatile Organic Compounds (VOC) that perhaps the chromatogram for that sample may shed some light on whether Non-Petroleum compounds might be present in the sample elevating the C5-C8 aliphatic result. Given the age of the release, Mr. Fitzgerald questioned why the other heavier weight carbon range fractions would be less than the C5-C8 aliphatics (**Table 1**), potentially questioning the results of the C5-C8aliphatic results.

3. Conclusion:

As a result of the above review of the data by Dr. Zhang and discussions with Mr. Fitzgerald (MassDEP NERO). The USACE project teams feels that this information should be presented to the Town for their consideration in discussions with their contractor, OTO, and MassDEP Western Regional Office (WERO). If the 120-day notification has already occurred, and the data is of questionable quality there is a process for retracting the reporting condition, if warranted.

ATTACHMENTS – Excerpts from Laboratory Data Package

ATTACHMENT A – Excerpts from Laboratory Data Package

MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test, a Pace Analytical Laboratory	Project #:	21I0921
Project Location:	Shutesbury, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

21I0921-01 thru 21I0921-11

Matrices: Soil

CAM Protocol (check all that below)

8260 VOC CAM II A (X)	7470/7471 Hg CAM IIIB ( )	MassDEP VPH CAM IV A (X)	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B ( )	7010 Metals CAM III C ( )	MassDEP VPH CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B (X)	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☑ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes	☑ No[1]

<u>Data User Note:</u> Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were all QC perfomance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Lisa Worthington Position: Technical Representative

Printed Name: Lisa A. Worthington Date: 09/23/21

con-test®
A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

MADEP-VPH-Feb 2018 Rev 2.1

Qualifications:

O-01

Soil/methanol ratio does not meet method specifications. Excess amount of soil. Sample was completely covered with methanol, but with less than the method-specified amount.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

S-15

Surrogate recovery outside of control limits due to suspected sample matrix interference. Chromatogram(s) is attached.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

SW-846 8082A

Qualifications:

O-32

A dilution was performed as part of the standard analytical procedure.

Analyte & Samples(s) Qualified:

21I0921-01[B-1 (5-7)], 21I0921-02[B-2 (1-3)], 21I0921-03[B-3 (5-7)], 21I0921-04[B-4 (3-5)], 21I0921-05[B-5 (5-7)], 21I0921-06[B-6 (3-5)], 21I0921-07[B-7 (0-1)], 21I0921-08[B-8 (1-3)], 21I0921-09[B-9 (0-1)], 21I0921-10[B-9 (8-10)], 21I0921-11[B-10 (1-3)]

SW-846 8260C-D

Qualifications:

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

Chloroethane
B290528-BS1

RL-05

Elevated reporting limit due to high concentration of target compounds. MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:

21I0921-10[B-9 (8-10)]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

Dichlorodifluoromethane (Freon 12
21I0921-01[B-1 (5-7)], 21I0921-03[B-3 (5-7)], 21I0921-05[B-5 (5-7)], 21I0921-11[B-10 (1-3)], B290543-BLK1, B290543-BS1, B290543-BSD1, S063414-CCV1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane
S063414-CCV1, S063445-CCV1

Tetrahydrofuran
S063414-CCV1

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Shutesbury, MA | Sample Description: | Work Order: 21I0921

Date Received: 9/17/2021

Field Sample #: B-9 (8-10) | Sampled: 9/16/2021 13:00

Sample ID: 21I0921-10

Sample Matrix: Soil

Sample Flags: O-01, S-15

Soil/Methanol Preservation Ratio: 1.48

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	100	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C5-C8 Aliphatics	100	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Unadjusted C9-C12 Aliphatics	160	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C9-C12 Aliphatics	89	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
C9-C10 Aromatics	66	17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Benzene	0.30	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Ethylbenzene	0.18	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Methyl tert-Butyl Ether (MTBE)	ND	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Naphthalene	0.54	0.42	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
Toluene	ND	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
m+p Xylene	0.28	0.17	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB
o-Xylene	0.20	0.085	mg/Kg dry	2		MADEP-VPH-Feb 2018 Rev 2.1	9/21/21	9/21/21 19:10	KMB

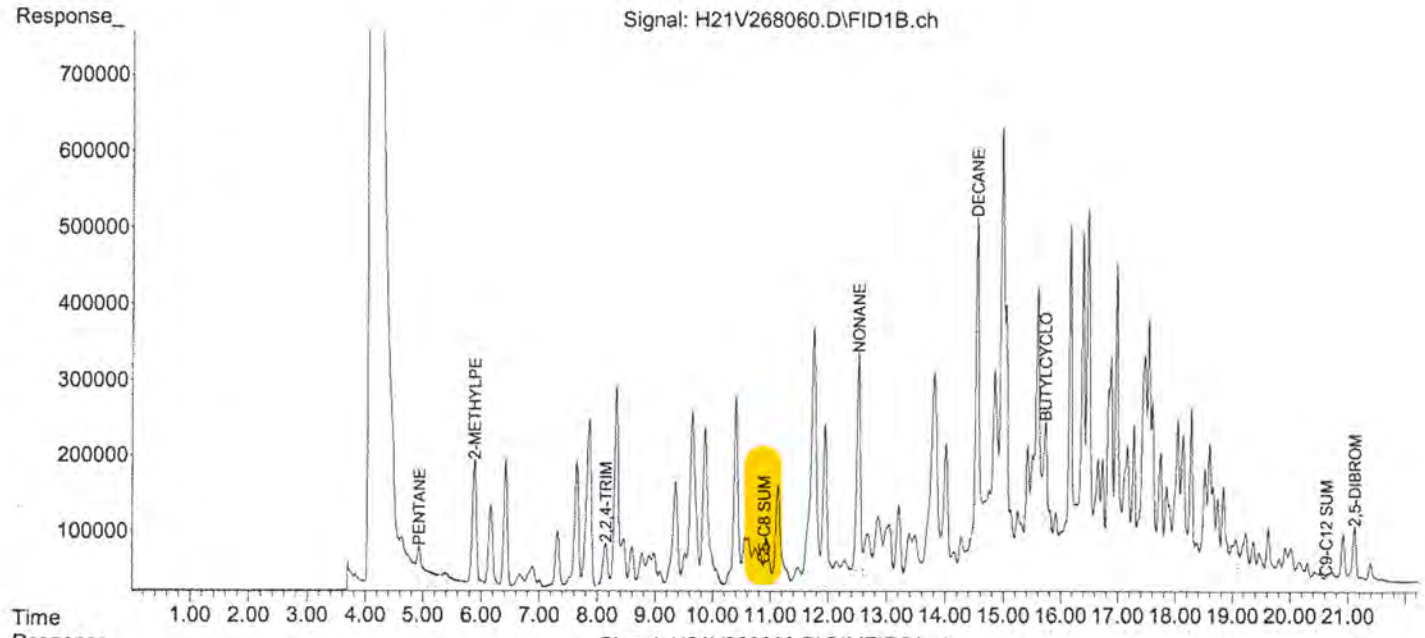
Surrogates	% Recovery	Recovery Limits	Flag/Qual		
2,5-Dibromotoluene (FID)	**136** *	70-130		9/21/21 19:10	
2,5-Dibromotoluene (PID)	**131** *	70-130		9/21/21 19:10	

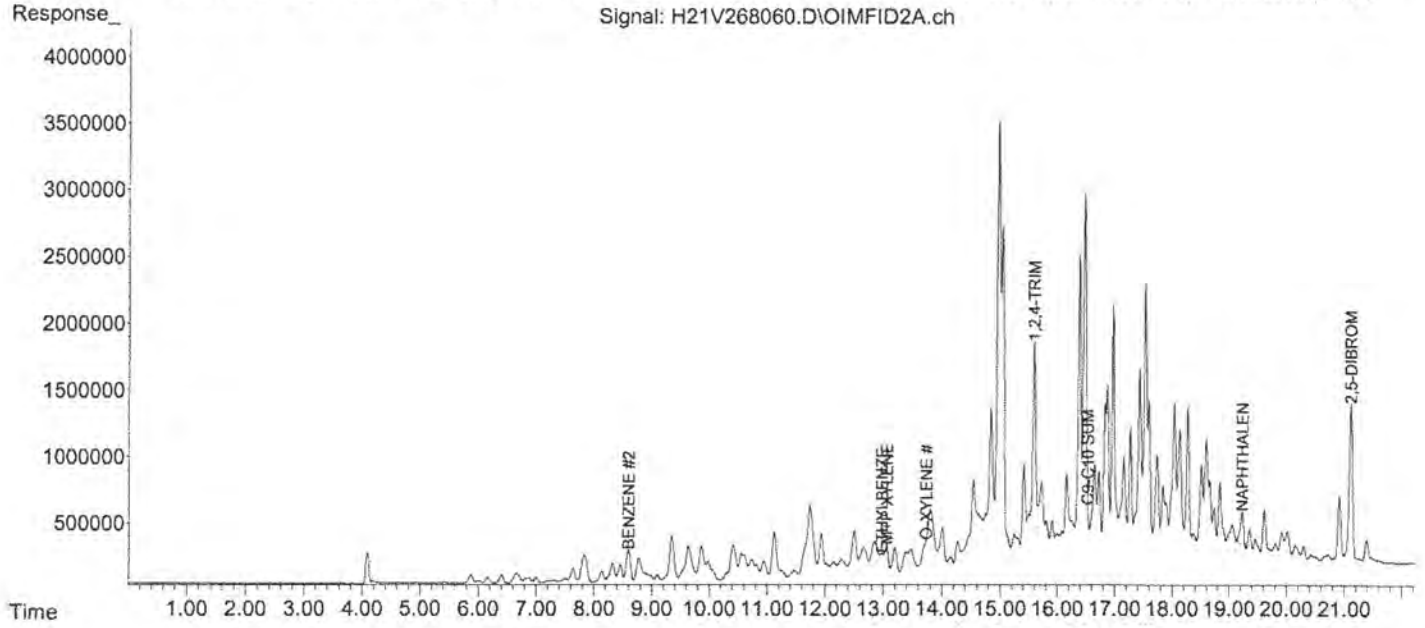
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\092021\
Data File : H21V268060.D
Signal(s) : Signal #1: FID1B.ch Signal #2: OIMFID2A.ch
Acq On : 21 Sep 2021 07:10 pm
Operator :
Sample : 21i0921-10 @ 100x meoh Inst : VPHGC3
Misc :
ALS Vial : 19 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 22 09:03:12 2021
Quant Method : C:\msdchem\1\methods\VN20421.M
Quant Title : VPHNEW
QLast Update : Mon Sep 20 15:42:15 2021
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Appendix C

Soil Boring and Groundwater Sampling Logs

FUSS & O'NEILL
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ENVIRONMENTAL BOREHOLE B-09R

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 20 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-20 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
0				CL Clay and sand; little gravel; light brown, dry.	0	1
					0	
2					0.1	2
						3
4				NR No recovery.		4
						5
6				CL Clay and sand; little gravel; light brown, dry.	0	6
					1.8	
				SC Sand F and gray clay; white.	0	7
8				NR No recovery.		8
						9
10		1701221111-01 (10-12 feet)		SC Sand F and gray clay; lense of white sand and flakes at 11 feet; white, moist at 12 feet. Light petroleum odor.	65.1	10
					7.8	11
12					3.8	12
						13
14				NR No recovery.		14
				▽		15
16				CL CLAY; little gravel and sand; gray, wet.	0.2	16
					0.4	
					0.1	17
18				NR No recovery.		18
						19
20				End of Boring Depth at 20 feet.		20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%

Template FnO Borehole100

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ENVIRONMENTAL BOREHOLE B-11

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
0				TS TOPSOIL.	0.5	1
2				CL Clay and sand; trace gravel; tan.	0.3	2
					0.2	3
4				NR No recovery.		4
						5
6				CL Clay and sand; trace gravel; tan.	0.1	6
					0.1	7
					0.2	8
8					0.1	9
						10
10		1701221111-04 (10.5-12.5 feet)		CL Clay and sand; trace gravel; tan, wet at 12.5 feet.	0.2	11
					0.1	12
12				▽	0.1	13
					0	14
14					0	15
16				End of Boring Depth at 15 feet.		16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%
Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

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ENVIRONMENTAL BOREHOLE B-12

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
				MH Silt and clay; trace gravel; light brown.	0.1	1
					0.3	
2				SC Sand and clay; trace gravel; gray.	1.1	2
						3
					0.5	
4				NR No recovery.		4
				SC Sand and clay; trace gravel; gray.	1.3	5
6						6
					1.3	7
8						8
					26.5	9
				NR No recovery.		10
10		1701221111-03 (10-12 feet)		SC Sand and clay; trace gravel; gray, wet at 13 feet. Petroleum odor.	58.7	11
					68.2	
12					5.2	12
				▽		13
					9.7	
14						14
				NR No recovery.		15
				End of Boring Depth at 15 feet.		
16						16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%
Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

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ENVIRONMENTAL BOREHOLE B-13

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
				OR ORGANICS.	0	1
				SW SAND; trace clay; light brown.	0.1	
2				SW SAND; trace clay; trace gravel; gray.	0.2	2
					0.1	3
4				NR No recovery.		4
				SW SAND; trace clay; trace gravel; gray.	0	5
6					0	6
					510.5	7
8				SW SAND; trace clay; trace gravel; lense of F white sand and flakes; gray. Odor.	400.1	8
		1701221111-02 (9-11 feet)				9
10				SW SAND; trace clay; trace gravel; lense of F white sand and flakes; gray. Petroleum odor.	102.1	10
					262.3	11
12				CL Clay and sand; trace gravel; gray.	60.5	12
					13.3	13
14				NR No recovery.		14
				End of Boring Depth at 15 feet.		15
16						16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%
Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

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ENVIRONMENTAL BOREHOLE B-14

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
0				OR ORGANICS.	0.2	0
				SC Sand and clay; little gravel; light gray.	0.2	1
					0.1	
2						2
				NR No recovery.		3
4						4
				SC Sand and clay; little gravel; light gray. Heterogenous (sections of sandy clay, mostly clay and mostly sand).	0.1	5
6					0.2	6
					0.4	7
8					0.2	8
					0.3	9
10				SC Sand and clay; little gravel; light gray, moist at 11 feet. Petroleum odor.	6.2	10
		1701221111-05 (10.5-12.5 feet)			222.7	11
12						12
				CL Clay and silt; little gravel; light gray. Petroleum odor.	5.1	13
14					6	14
						15
				End of Boring Depth at 15 feet.		
16						16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%

Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

FUSS & O'NEILL
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ENVIRONMENTAL BOREHOLE B-15

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
0				MH Silt and clay; some sand; little organics; dark brown.	0.6	0
				SW Sand, C-M and gravel.	3.4	1
					0.8	
2				NR No recovery.		2
4						4
				SW Sand, C-M and gravel.	0.7	5
6				SW Sand, C-M and gravel; trace clay; wet at 9.0 feet.	1.4	6
		1701221111-06 (7-9 feet)			2	7
8					0.9	8
						9
10				NR No recovery.		10
				SC Sand, C-M and gravel; some clay.	0.5	11
					0.4	
12					0.1	12
					0	13
14						14
				NR No recovery.		15
16				End of Boring Depth at 15 feet.		16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%

Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

FUSS & O'NEILL
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ENVIRONMENTAL BOREHOLE B-16

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
				TS TOPSOIL.		
				Fl Clay and sand; some gravel; light brown. (Fill).	0.2	1
					0.5	
2						2
					0.3	
					0.3	3
4						4
				NR No recovery.		
				Fl Clay and sand; some gravel; light brown. (Fill).	0.1	5
6					0.2	6
					0.1	7
8						8
					0.3	9
					0	
				Fl Ash, gray and clay; trace sand. (Fill).		
10				Fl Ash, gray and clay; trace sand. (Fill).	0	10
		1701221111-07 (11-13 feet)		CL CLAY; some sand; trace gravel; moist at 11.5 feet.	0.4	11
12					1.2	12
					0.2	13
14				NR No recovery.		14
						15
				End of Boring Depth at 15 feet.		
16						16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%
Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

FUSS & O'NEILL
ENGINEERS • SCIENTISTS • PLANNERS

ENVIRONMENTAL BOREHOLE B-17

PROJECT NUMBER: 20091032.A22
PROJECT NAME: Shutesbury Library
ADDRESS: Cooleyville Road Shutesbury, Massachusetts
START DATE: 11/11/2022
END DATE: 11/11/2022

DRILLING COMPANY: GeoSearch Inc
DRILLER: E. Belsky
DRILLING METHOD: Direct Push
BORING DIAMETER: 1.5 inches
TOTAL DEPTH: 15 feet

COORDINATES: NA, NA
DATUM: NA
SURFACE ELEVATION NA
LOGGED BY: C. Otis
CHECKED BY: MK

COMMENTS: Field Instrument: PID

BACKFILL: Native Material (0-15 feet)

Depth (ft)	% Recovery	Samples	Graphic Log	Material Description	PID	Elevation (ft)
0				MH Silt and clay; some sand; little organics; dark brown.	0.1	1
2				CL Clay and sand; trace gravel; gray.	0.3	2
					0.5	3
4				NR No recovery.		4
				CL Clay and sand; trace gravel; gray.	0.1	5
6					0.1	6
					0.1	7
8					0.2	8
						9
10				CL Clay and sand; trace gravel; gray, moist at 14.2 feet.	0.1	10
		1701221111-08 (11-13 feet)			0.2	11
12					1.9	12
					3.7	13
14						14
				NR No recovery.		15
				End of Boring Depth at 15 feet.		
16						16
						17
18						18
						19
20						20
						21

Proportions Used Trace 0-10% / Little 10-20% / Some 20-35% / And 35-50%
Template FnO Borehole100

produced by ESlog.ESdat.net on 19 Jan 2023

Monitoring Well Sample Log

Low Flow Sampling

Client/Project Name: Shutesbury Library Ph II	
Project Location: Shutesbury, MA	**PROJECT #: 20091032.A22**
Sample#: 1701221202-01	**WELL ID:** New well

FUSS & O'NEILL
Disciplines to Deliver

Purge Data

Date: 12/02/22

Start time: 1125 **Stop time:** 1145 **Sample time:** 1150
Pump Rate: 150 (ml/m) **Depth Sampled:** ~18'
Total time purged: 20 min **Sampler:** CJO
Volume Purged: ~3 (ltr)
Purge Device: Dedicated / Nondedicated **Weather:** Clear, ~35°F
Device Type: Bladder / Peristaltic / Submersible
Filtered? N / Y **Filter Size:** 10u / 0.45u **Filtered in:** Field / Lab
Appearance: Clear, light petro odor occasionally **PVC:** 13.98'
Well Yield: High / Moderate / Low / Dry **TPS:**
Comments: **DTB:** 22.54'

Sample Data

Container	Quantity	Preservative
VOA	3	HCl
Amber L	1	HCl
P 250	1	HNO3

Field Parameter Data

Instrument ID#

Solinst#		2020#	YSI 600 #				
Water Level (ft)	Time	Turbidity (ntu)	Dissolved Oxygen (mg/L)	pH	Temp. (deg C)	Specific Conductivity (uS)	ORP(mV)
13.98	1125	Start					
14.20	1135	4.13	2.62	6.24	9.5	169.9	14.3
14.27	1140	5.90	3.25	6.24	9.5	167.3	19.6
14.32	1145	3.34	3.19	6.25	9.7	168.9	10.0
		Stop					
	1150	Sample					

Well Condition Checklist

(circle appropriate item(s), cross out if not applicable)

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose/ None
Well # Visible?: Y / N
Well Cap Good / Broken / None
Evidence of rain water between steel and PVC?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Is well plumb?: Y / N
Lock: Good / Broken / None
Rust around cap: Y / N
PVC Riser: Good / Damaged / None
Concrete collar: OK / Cracked / Leaking / None
Other evidence of: Rodents / Insects / None
Curb Box: N / Y (key is: Hex / Pent / Other)

Appendix D

Laboratory Reports (Nov 2022 to Dec 2022)

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 2K14059
Client Project: 20091032.A22 - Shutesbury Library

Report Date: 29-November-2022

Prepared for:

Matt Kissane
Fuss & O'Neill
317 Iron Horse Way
Providence, RI 02908

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 11/14/22. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 2K14059. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
2K14059-01	1701221111-01	Soil	11/11/2022	11/14/2022
2K14059-02	1701221111-02	Soil	11/11/2022	11/14/2022
2K14059-05	1701221111-05	Soil	11/11/2022	11/14/2022
2K14059-06	1701221111-06	Soil	11/11/2022	11/14/2022
2K14059-07	1701221111-07	Soil	11/11/2022	11/14/2022
2K14059-08	1701221111-08	Soil	11/11/2022	11/14/2022

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

1701221111-01 (Lab Number: 2K14059-01)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

1701221111-02 (Lab Number: 2K14059-02)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

1701221111-05 (Lab Number: 2K14059-05)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

1701221111-06 (Lab Number: 2K14059-06)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

1701221111-07 (Lab Number: 2K14059-07)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

1701221111-08 (Lab Number: 2K14059-08)

Analysis	Method
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH

Method References

Method for the Determination of Extractable Petroleum Hydrocarbons, Rev. 2.1, Massachusetts Department of Environmental Protection, 2004

Method for the Determination of Volatile Petroleum Hydrocarbons, Rev. 2.1, Massachusetts Department of Environmental Protection, 2018

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Case Narrative

Sample Receipt:

The samples associated with this work order were received in appropriately cooled and preserved containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Exceptions: None

Analysis:

All samples were prepared and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control requirements and allowances. Results for all soil samples, unless otherwise indicated, are reported on a dry weight basis.

Exceptions: None

Results: Total Metals

Sample: 1701221111-01
Lab Number: 2K14059-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**3.92**		0.61	mg/kg	11/15/22	11/18/22

Results: Total Metals

Sample: 1701221111-02
Lab Number: 2K14059-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**2.10**		0.55	mg/kg	11/15/22	11/18/22

Results: Total Metals

Sample: 1701221111-05
Lab Number: 2K14059-05 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**2.83**		0.58	mg/kg	11/15/22	11/18/22

Results: Total Metals

Sample: 1701221111-06
Lab Number: 2K14059-06 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**1.49**		0.58	mg/kg	11/15/22	11/18/22

Results: Total Metals

Sample: 1701221111-07
Lab Number: 2K14059-07 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**1.58**		0.57	mg/kg	11/15/22	11/18/22

Results: Total Metals

Sample: 1701221111-08
Lab Number: 2K14059-08 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Lead	**1.48**		0.56	mg/kg	11/15/22	11/18/22

Volatile Petroleum Hydrocarbons
Sample: 1701221111-01 (2K14059-01)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-01	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-01	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		12.20	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	6.0	mg/kg	**9.0**	11/21/22 13:28
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	6.0	mg/kg	**90.0**	11/21/22 13:28
Benzene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 13:28
Ethylbenzene	C9-C12	50X	0.3	mg/kg	<0.3	11/21/22 13:28
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.06	mg/kg	<0.06	11/21/22 13:28
Naphthalene	NA	50X	0.6	mg/kg	<0.6	11/21/22 13:28
Toluene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 13:28
m&p-Xylene	C9-C12	50X	0.6	mg/kg	<0.6	11/21/22 13:28
o-Xylene	C9-C12	50X	0.6	mg/kg	<0.6	11/21/22 13:28
Total xylenes		50X	0.6	mg/kg	<0.6	11/21/22 13:28
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	6.0	mg/kg	**9.0**	11/21/22 13:28
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	6.0	mg/kg	**75.2**	11/21/22 13:28
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	6.0	mg/kg	**14.9**	11/21/22 13:28
2,5-Dibromotoluene-PID				%	87.0	11/21/22 13:28
2,5-Dibromotoluene-FID				%	88.5	11/21/22 13:28
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221111-02 (2K14059-02)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-02	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-02	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		8.40	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	6.1	mg/kg	**22.6**	11/21/22 14:01
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	6.1	mg/kg	**95.0**	11/21/22 14:01
Benzene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 14:01
Ethylbenzene	C9-C12	50X	0.3	mg/kg	<0.3	11/21/22 14:01
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.06	mg/kg	<0.06	11/21/22 14:01
Naphthalene	NA	50X	0.6	mg/kg	<0.6	11/21/22 14:01
Toluene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 14:01
m&p-Xylene	C9-C12	50X	0.6	mg/kg	<0.6	11/21/22 14:01
o-Xylene	C9-C12	50X	0.6	mg/kg	<0.6	11/21/22 14:01
Total xylenes		50X	0.6	mg/kg	<0.6	11/21/22 14:01
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	6.1	mg/kg	**22.5**	11/21/22 14:01
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	6.1	mg/kg	**73.4**	11/21/22 14:01
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	6.1	mg/kg	**21.4**	11/21/22 14:01
2,5-Dibromotoluene-PID				%	92.9	11/21/22 14:01
2,5-Dibromotoluene-FID				%	96.5	11/21/22 14:01
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221111-05 (2K14059-05)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-05	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-05	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		7.50	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	**76.1**	11/21/22 15:40
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	**161**	11/21/22 15:40
Benzene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 15:40
Ethylbenzene	C9-C12	50X	0.3	mg/kg	**0.9**	11/21/22 15:40
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.05	mg/kg	<0.05	11/21/22 15:40
Naphthalene	NA	50X	0.5	mg/kg	<0.5	11/21/22 15:40
Toluene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 15:40
m&p-Xylene	C9-C12	50X	0.5	mg/kg	**1.4**	11/21/22 15:40
o-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 15:40
Total xylenes		50X	0.5	mg/kg	**1.4**	11/21/22 15:40
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	5.0	mg/kg	**76.1**	11/21/22 15:40
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	5.0	mg/kg	**125**	11/21/22 15:40
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	**33.9**	11/21/22 15:40
2,5-Dibromotoluene-PID				%	88.9	11/21/22 15:40
2,5-Dibromotoluene-FID				%	89.8	11/21/22 15:40
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221111-06 (2K14059-06)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-06	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-06	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		8.90	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	5.1	mg/kg	<5.1	11/21/22 16:12
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	5.1	mg/kg	<5.1	11/21/22 16:12
Benzene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 16:12
Ethylbenzene	C9-C12	50X	0.3	mg/kg	<0.3	11/21/22 16:12
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.05	mg/kg	<0.05	11/21/22 16:12
Naphthalene	NA	50X	0.5	mg/kg	<0.5	11/21/22 16:12
Toluene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 16:12
m&p-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 16:12
o-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 16:12
Total xylenes		50X	0.5	mg/kg	<0.5	11/21/22 16:12
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	5.1	mg/kg	<5.1	11/21/22 16:12
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	5.1	mg/kg	<5.1	11/21/22 16:12
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	5.1	mg/kg	<5.1	11/21/22 16:12
2,5-Dibromotoluene-PID				%	87.7	11/21/22 16:12
2,5-Dibromotoluene-FID				%	88.7	11/21/22 16:12
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221111-07 (2K14059-07)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-07	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-07	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		7.80	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	4.9	mg/kg	<4.9	11/21/22 16:46
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	4.9	mg/kg	<4.9	11/21/22 16:46
Benzene	C5-C8	50X	0.2	mg/kg	<0.2	11/21/22 16:46
Ethylbenzene	C9-C12	50X	0.2	mg/kg	<0.2	11/21/22 16:46
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.05	mg/kg	<0.05	11/21/22 16:46
Naphthalene	NA	50X	0.5	mg/kg	<0.5	11/21/22 16:46
Toluene	C5-C8	50X	0.2	mg/kg	<0.2	11/21/22 16:46
m&p-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 16:46
o-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 16:46
Total xylenes		50X	0.5	mg/kg	<0.5	11/21/22 16:46
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	4.9	mg/kg	<4.9	11/21/22 16:46
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	4.9	mg/kg	<4.9	11/21/22 16:46
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	4.9	mg/kg	<4.9	11/21/22 16:46
2,5-Dibromotoluene-PID				%	89.9	11/21/22 16:46
2,5-Dibromotoluene-FID				%	94.3	11/21/22 16:46
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221111-08 (2K14059-08)

SAMPLE INFORMATION

Matrix	Soil		
Containers	Satisfactory		
Sample Preservation	Aqueous	NA	
	Soil or Sediment	Preserved with methanol and/or in an air-tight container	ml methanol per gram soil: 1:1 +/- 25%
		Methanol preserved (covering sample)	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221111-08	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2K14059-08	
VPH Surrogate Standards:			Date Collected		11/11/22	
PID: 2,5-Dibromotoluene			Date Received		11/14/22	
FID: 2,5-Dibromotoluene			% Moisture		8.30	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	<5.0	11/21/22 17:19
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	**8.7**	11/21/22 17:19
Benzene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 17:19
Ethylbenzene	C9-C12	50X	0.3	mg/kg	<0.3	11/21/22 17:19
Methyl t-butyl ether (MTBE)	C5-C8	50X	0.05	mg/kg	<0.05	11/21/22 17:19
Naphthalene	NA	50X	0.5	mg/kg	<0.5	11/21/22 17:19
Toluene	C5-C8	50X	0.3	mg/kg	<0.3	11/21/22 17:19
m&p-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 17:19
o-Xylene	C9-C12	50X	0.5	mg/kg	<0.5	11/21/22 17:19
Total xylenes		50X	0.5	mg/kg	<0.5	11/21/22 17:19
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	50X	5.0	mg/kg	<5.0	11/21/22 17:19
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	50X	5.0	mg/kg	**8.7**	11/21/22 17:19
C9-C10 Aromatic Hydrocarbons [1]	NA	50X	5.0	mg/kg	<5.0	11/21/22 17:19
2,5-Dibromotoluene-PID				%	87.7	11/21/22 17:19
2,5-Dibromotoluene-FID				%	87.6	11/21/22 17:19
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Extractable Petroleum Hydrocarbons
Sample: 1701221111-01 (2K14059-01)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-01	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-01	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	12.20	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.55	mg/kg	<7.55	11/29/22 03:16
Diesel PAH Analytes	Naphthalene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	2-Methylnaphthalene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Phenanthrene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Acenaphthene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
Other Target PAH Analytes	Acenaphthylene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Fluorene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Anthracene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Fluoranthene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Pyrene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Benzo(a)anthracene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Chrysene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Benzo(b)fluoranthene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Benzo(k)fluoranthene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Benzo(a)pyrene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Indeno(1,2,3-cd)pyrene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Dibenz(a,h)anthracene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
	Benzo(g,h,i)perylene	1X	0.37	mg/kg	<0.37	11/29/22 03:16
C9-C18 Aliphatic Hydrocarbons [1]		1X	15.0	mg/kg	<15.0	11/29/22 04:41
C19-C36 Aliphatic Hydrocarbons [1]		1X	15.0	mg/kg	<15.0	11/29/22 04:41
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.55	mg/kg	<7.55	11/29/22 03:16
Chlorooctadecane (Sample Surrogate)				%	52.5	11/29/22 04:41
o-Terphenyl (Sample Surrogate)				%	49.1	11/29/22 03:16
2-Fluorobiphenyl (Fractionation Surrogate)				%	74.0	11/29/22 03:16
2-Bromonaphthalene (Fractionation Surrogate)				%	72.4	11/29/22 03:16
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Extractable Petroleum Hydrocarbons
Sample: 1701221111-02 (2K14059-02)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-02	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-02	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	8.40	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.23	mg/kg	**10.0**	11/29/22 03:39
Diesel PAH Analytes	Naphthalene	1X	0.36	mg/kg	**0.60**	11/29/22 03:39
	2-Methylnaphthalene	1X	0.36	mg/kg	**0.47**	11/29/22 03:39
	Phenanthrene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Acenaphthene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
Other Target PAH Analytes	Acenaphthylene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Fluorene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Anthracene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Pyrene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Benzo(a)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Chrysene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Benzo(b)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Benzo(k)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Benzo(a)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Indeno(1,2,3-cd)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Dibenz(a,h)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
	Benzo(g,h,i)perylene	1X	0.36	mg/kg	<0.36	11/29/22 03:39
C9-C18 Aliphatic Hydrocarbons [1]		1X	14.4	mg/kg	**15.2**	11/29/22 05:05
C19-C36 Aliphatic Hydrocarbons [1]		1X	14.4	mg/kg	<14.4	11/29/22 05:05
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.23	mg/kg	**8.95**	11/29/22 03:39
Chlorooctadecane (Sample Surrogate)				%	46.1	11/29/22 05:05
o-Terphenyl (Sample Surrogate)				%	42.3	11/29/22 03:39
2-Fluorobiphenyl (Fractionation Surrogate)				%	64.3	11/29/22 03:39
2-Bromonaphthalene (Fractionation Surrogate)				%	62.3	11/29/22 03:39
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Extractable Petroleum Hydrocarbons
Sample: 1701221111-05 (2K14059-05)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-05	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-05	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	7.50	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.16	mg/kg	<7.16	11/29/22 04:01
Diesel PAH Analytes	Naphthalene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	2-Methylnaphthalene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Phenanthrene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Acenaphthene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
Other Target PAH Analytes	Acenaphthylene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Fluorene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Anthracene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Fluoranthene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Pyrene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Benzo(a)anthracene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Chrysene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Benzo(b)fluoranthene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Benzo(k)fluoranthene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Benzo(a)pyrene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Indeno(1,2,3-cd)pyrene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Dibenz(a,h)anthracene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
	Benzo(g,h,i)perylene	1X	0.35	mg/kg	<0.35	11/29/22 04:01
C9-C18 Aliphatic Hydrocarbons [1]		1X	14.3	mg/kg	<14.3	11/29/22 05:29
C19-C36 Aliphatic Hydrocarbons [1]		1X	14.3	mg/kg	<14.3	11/29/22 05:29
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.16	mg/kg	<7.16	11/29/22 04:01
Chlorooctadecane (Sample Surrogate)				%	48.7	11/29/22 05:29
o-Terphenyl (Sample Surrogate)				%	45.9	11/29/22 04:01
2-Fluorobiphenyl (Fractionation Surrogate)				%	81.5	11/29/22 04:01
2-Bromonaphthalene (Fractionation Surrogate)				%	80.0	11/29/22 04:01
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Extractable Petroleum Hydrocarbons
Sample: 1701221111-06 (2K14059-06)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-06	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-06	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	8.90	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.27	mg/kg	**9.11**	11/29/22 04:24
Diesel PAH Analytes	Naphthalene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	2-Methylnaphthalene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Phenanthrene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Acenaphthene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
Other Target PAH Analytes	Acenaphthylene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Fluorene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Benzo(a)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Chrysene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Benzo(b)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Benzo(k)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Benzo(a)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Indeno(1,2,3-cd)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Dibenz(a,h)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
	Benzo(g,h,i)perylene	1X	0.36	mg/kg	<0.36	11/29/22 04:24
C9-C18 Aliphatic Hydrocarbons [1]		1X	14.5	mg/kg	<14.5	11/29/22 05:55
C19-C36 Aliphatic Hydrocarbons [1]		1X	14.5	mg/kg	<14.5	11/29/22 05:55
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.27	mg/kg	**9.11**	11/29/22 04:24
Chlorooctadecane (Sample Surrogate)				%	46.2	11/29/22 05:55
o-Terphenyl (Sample Surrogate)				%	45.5	11/29/22 04:24
2-Fluorobiphenyl (Fractionation Surrogate)				%	74.5	11/29/22 04:24
2-Bromonaphthalene (Fractionation Surrogate)				%	73.1	11/29/22 04:24
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Extractable Petroleum Hydrocarbons
Sample: 1701221111-07 (2K14059-07)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-07	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-07	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	7.80	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.19	mg/kg	<7.19	11/29/22 04:47
Diesel PAH Analytes	Naphthalene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	2-Methylnaphthalene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Phenanthrene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Acenaphthene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
Other Target PAH Analytes	Acenaphthylene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Fluorene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Benzo(a)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Chrysene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Benzo(b)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Benzo(k)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Benzo(a)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Indeno(1,2,3-cd)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Dibenz(a,h)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
	Benzo(g,h,i)perylene	1X	0.36	mg/kg	<0.36	11/29/22 04:47
C9-C18 Aliphatic Hydrocarbons [1]		1X	14.3	mg/kg	<14.3	11/29/22 06:17
C19-C36 Aliphatic Hydrocarbons [1]		1X	14.3	mg/kg	<14.3	11/29/22 06:17
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.19	mg/kg	<7.19	11/29/22 04:47
Chlorooctadecane (Sample Surrogate)				%	53.0	11/29/22 06:17
o-Terphenyl (Sample Surrogate)				%	60.4	11/29/22 04:47
2-Fluorobiphenyl (Fractionation Surrogate)				%	87.8	11/29/22 04:47
2-Bromonaphthalene (Fractionation Surrogate)				%	86.6	11/29/22 04:47
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Extractable Petroleum Hydrocarbons
Sample: 1701221111-08 (2K14059-08)

SAMPLE INFORMATION

Matrix	Soil
Containers	Satisfactory
Aqueous Preservatives	NA
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3546

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221111-08	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2K14059-08	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	11/11/22	
				Date Received	11/14/22	
				Date Thawed	NA	
				Date Extracted	11/23/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	8.30	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	7.22	mg/kg	<7.22	11/29/22 05:09
Diesel PAH Analytes	Naphthalene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	2-Methylnaphthalene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Phenanthrene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Acenaphthene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
Other Target PAH Analytes	Acenaphthylene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Fluorene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Anthracene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Pyrene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Benzo(a)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Chrysene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Benzo(b)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Benzo(k)fluoranthene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Benzo(a)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Indeno(1,2,3-cd)pyrene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Dibenz(a,h)anthracene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
	Benzo(g,h,i)perylene	1X	0.36	mg/kg	<0.36	11/29/22 05:09
C9-C18 Aliphatic Hydrocarbons [1]		1X	14.4	mg/kg	<14.4	11/29/22 06:41
C19-C36 Aliphatic Hydrocarbons [1]		1X	14.4	mg/kg	<14.4	11/29/22 06:41
C11-C22 Aromatic Hydrocarbons [1,2]		1X	7.22	mg/kg	<7.22	11/29/22 05:09
Chlorooctadecane (Sample Surrogate)				%	46.7	11/29/22 06:41
o-Terphenyl (Sample Surrogate)				%	50.7	11/29/22 05:09
2-Fluorobiphenyl (Fractionation Surrogate)				%	83.0	11/29/22 05:09
2-Bromonaphthalene (Fractionation Surrogate)				%	81.1	11/29/22 05:09
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Quality Control

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2K0858 - Metals Digestion Soils										
Blank (B2K0858-BLK1)					Prepared: 11/15/22 Analyzed: 11/16/22					
Lead	ND		0.50	mg/kg						
LCS (B2K0858-BS1)					Prepared: 11/15/22 Analyzed: 11/16/22					
Lead	102		0.50	mg/kg	100		102	85-115		
LCS Dup (B2K0858-BSD1)					Prepared: 11/15/22 Analyzed: 11/16/22					
Lead	102		0.50	mg/kg	100		102	85-115	0.00	200
Matrix Spike (B2K0858-MS1)		Source: 2K14040-02			Prepared: 11/15/22 Analyzed: 11/18/22					
Lead	124		0.54	mg/kg dry	108	8.30	107	75-125		
Matrix Spike Dup (B2K0858-MSD1)		Source: 2K14040-02			Prepared: 11/15/22 Analyzed: 11/18/22					
Lead	140		0.60	mg/kg dry	120	8.30	110	75-125	11.8	20

Quality Control
(Continued)

Volatile Petroleum Hydrocarbons (MADEP-VPH)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2K1045 - MADEP VPH										
Blank (B2K1045-BLK1)					Prepared & Analyzed: 11/21/22					
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND		5.0	mg/kg						
Unadjusted C9-C12 Aliphatic Hydrocarbons	ND		5.0	mg/kg						
C5-C8 Aliphatic Hydrocarbons	ND		5.0	mg/kg						
C9-C12 Aliphatic Hydrocarbons	ND		5.0	mg/kg						
C9-C10 Aromatic Hydrocarbons	ND		5.0	mg/kg						
Surrogate: 2,5- Dibromotoluene-PID			*41.5*	ug/l	*50.0*		*83.1*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*40.4*	ug/l	*50.0*		*80.9*	*70-130*		
LCS (B2K1045-BS1)					Prepared & Analyzed: 11/21/22					
Benzene	2.3		0.2	mg/kg	2.50		93.1	70-130		
Ethylbenzene	2.5		0.2	mg/kg	2.50		99.2	70-130		
Methyl t-butyl ether (MTBE)	2.3		0.05	mg/kg	2.50		93.4	70-130		
Naphthalene	2.6		0.5	mg/kg	2.50		104	70-130		
Toluene	2.4		0.2	mg/kg	2.50		95.9	70-130		
m&p-Xylene	5.1		0.5	mg/kg	5.00		101	70-130		
2-Methylpentane	2.3		250	mg/kg	2.50		93.5	70-130		
o-Xylene	2.5		0.5	mg/kg	2.50		102	70-130		
n-Nonane	2.2		250	mg/kg	2.50		89.8	70-130		
Decane	2.5		250	mg/kg	2.50		101	70-130		
C5-C8 Aliphatic Hydrocarbons	ND		5.0	mg/kg				70-130		
n-Butylcylohexane	2.6		250	mg/kg	2.50		106	70-130		
n-Pentane	2.3		250	mg/kg	2.50		91.5	70-130		
C9-C12 Aliphatic Hydrocarbons	ND		5.0	mg/kg				70-130		
1,2,4-Trimethylbenzene	2.8		0.5	mg/kg	2.50		113	70-130		
VPH_LCS_Aliphatic_C5-C8	7.0		0.5	mg/kg	7.50		92.9	70-130		
C9-C10 Aromatic Hydrocarbons	ND		5.0	mg/kg	2.50			70-130		
VPH_LCS_Aliphatic_C9-C12	5.2		0.5	mg/kg	5.00		103	70-130		
VPH_LCS_Aromatic_C9-C10	2.8		0.5	mg/kg	2.50		113	70-130		
Surrogate: 2,5- Dibromotoluene-PID			*37.5*	ug/l	*50.0*		*75.0*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*40.0*	ug/l	*50.0*		*80.1*	*70-130*		

Quality Control
(Continued)

Volatile Petroleum Hydrocarbons (MADEP-VPH) (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2K1045 - MADEP VPH (Continued)										
LCS Dup (B2K1045-BSD1)					Prepared & Analyzed: 11/21/22					
Benzene	2.4		0.2	mg/kg	2.50		96.2	70-130	3.30	25
Ethylbenzene	2.6		0.2	mg/kg	2.50		102	70-130	3.23	25
Methyl t-butyl ether (MTBE)	2.4		0.05	mg/kg	2.50		96.4	70-130	3.16	25
Naphthalene	2.7		0.5	mg/kg	2.50		107	70-130	3.21	25
Toluene	2.5		0.2	mg/kg	2.50		99.1	70-130	3.30	25
m&p-Xylene	5.2		0.5	mg/kg	5.00		105	70-130	3.39	25
2-Methylpentane	2.4		250	mg/kg	2.50		97.0	70-130	3.65	25
n-Nonane	2.3		250	mg/kg	2.50		91.2	70-130	1.61	25
o-Xylene	2.6		0.5	mg/kg	2.50		105	70-130	3.12	25
Decane	2.6		250	mg/kg	2.50		104	70-130	3.05	25
C5-C8 Aliphatic Hydrocarbons	ND		5.0	mg/kg				70-130		25
n-Butylcylohexane	2.5		250	mg/kg	2.50		102	70-130	4.01	25
n-Pentane	2.4		250	mg/kg	2.50		95.6	70-130	4.38	25
C9-C12 Aliphatic Hydrocarbons	ND		5.0	mg/kg				70-130		25
1,2,4-Trimethylbenzene	2.9		0.5	mg/kg	2.50		115	70-130	1.74	25
VPH_LCS_Aliphatic_C5-C8	7.2		0.5	mg/kg	7.50		96.5	70-130	3.72	25
C9-C10 Aromatic Hydrocarbons	ND		5.0	mg/kg	2.50			70-130		25
VPH_LCS_Aliphatic_C9-C12	5.1		0.5	mg/kg	5.00		103	70-130	0.505	25
VPH_LCS_Aromatic_C9-C10	2.9		0.5	mg/kg	2.50		115	70-130	1.74	25
Surrogate: 2,5- Dibromotoluene-PID			*38.3*	ug/l	*50.0*		*76.7*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*37.3*	ug/l	*50.0*		*74.6*	*70-130*		

Extractable Petroleum Hydrocarbons (MADEP-EPH)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2K1235 - EPA 3546										
Blank (B2K1235-BLK1)					Prepared: 11/23/22 Analyzed: 11/28/22					
Unadjusted C11-C22 Aromatic Hydrocarbons	ND		6.67	mg/kg						
Naphthalene	ND		0.33	mg/kg						
2-Methylnaphthalene	ND		0.33	mg/kg						
Phenanthrene	ND		0.33	mg/kg						
Acenaphthene	ND		0.33	mg/kg						
Acenaphthylene	ND		0.33	mg/kg						
Fluorene	ND		0.33	mg/kg						
Anthracene	ND		0.33	mg/kg						
Fluoranthene	ND		0.33	mg/kg						
Pyrene	ND		0.33	mg/kg						
Benzo(a)anthracene	ND		0.33	mg/kg						
Chrysene	ND		0.33	mg/kg						
Benzo(b)fluoranthene	ND		0.33	mg/kg						
Benzo(k)fluoranthene	ND		0.33	mg/kg						
Benzo(a)pyrene	ND		0.33	mg/kg						
Indeno(1,2,3-cd)pyrene	ND		0.33	mg/kg						
Dibenz(a,h)anthracene	ND		0.33	mg/kg						
Benzo(g,h,i)perylene	ND		0.33	mg/kg						
C9-C18 Aliphatic Hydrocarbons	ND		13.3	mg/kg						
C19-C36 Aliphatic Hydrocarbons	ND		13.3	mg/kg						
C11-C22 Aromatic Hydrocarbons	ND		6.67	mg/kg						
Surrogate: Chlorooctadecane			*4.02*	mg/kg	*8.33*		*48.2*	*40-140*		
Surrogate: o-Terphenyl			*4.15*	mg/kg	*8.33*		*49.8*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*2.99*	mg/kg	*3.33*		*89.6*	*40-140*		
Surrogate: 2-Bromonaphthalene			*2.19*	mg/kg	*3.33*		*65.7*	*40-140*		
LCS (B2K1235-BS1)					Prepared: 11/23/22 Analyzed: 11/28/22					
Naphthalene	1.37		0.33	mg/kg	2.67		51.2	40-140		
2-Methylnaphthalene	1.36		0.33	mg/kg	2.67		51.1	40-140		
Phenanthrene	1.28		0.33	mg/kg	2.67		48.0	40-140		
Acenaphthene	1.31		0.33	mg/kg	2.67		49.0	40-140		
Acenaphthylene	1.28		0.33	mg/kg	2.67		48.0	40-140		
Fluorene	1.32		0.33	mg/kg	2.67		49.3	40-140		
Anthracene	1.39		0.33	mg/kg	2.67		52.1	40-140		
Fluoranthene	1.36		0.33	mg/kg	2.67		51.0	40-140		
Pyrene	1.37		0.33	mg/kg	2.67		51.5	40-140		
Benzo(a)anthracene	1.35		0.33	mg/kg	2.67		50.8	40-140		
Chrysene	1.45		0.33	mg/kg	2.67		54.2	40-140		
Benzo(b)fluoranthene	1.38		0.33	mg/kg	2.67		51.6	40-140		
Benzo(k)fluoranthene	1.78		0.33	mg/kg	2.67		66.7	40-140		
Benzo(a)pyrene	1.33		0.33	mg/kg	2.67		50.0	40-140		
Indeno(1,2,3-cd)pyrene	1.23		0.33	mg/kg	2.67		46.1	40-140		
Dibenz(a,h)anthracene	1.33		0.33	mg/kg	2.67		49.8	40-140		
Benzo(g,h,i)perylene	1.58		0.33	mg/kg	2.67		59.2	40-140		
EPH_LCS_Aliphatic_C19-C36	12.8		0.00	mg/kg	21.3		60.0	40-140		
EPH_LCS_Aliphatic_C9-C18	7.60		0.00	mg/kg	16.0		47.5	40-140		
EPH_LCS_Aromatic_C11-C22	23.5		0.00	mg/kg	45.3		51.8	40-140		
Nonane	0.99		0.33	mg/kg	2.67		37.2	30-140		
Decane	1.27		0.33	mg/kg	2.67		47.5	40-140		
Dodecane	1.23		0.33	mg/kg	2.67		46.2	40-140		
Tetradecane	1.36		0.33	mg/kg	2.67		50.9	40-140		
Hexadecane	1.40		0.33	mg/kg	2.67		52.6	40-140		
Octadecane	1.34		0.33	mg/kg	2.67		50.4	40-140		
Nonadecane	1.42		0.33	mg/kg	2.67		53.1	40-140		
Eicosane	1.39		0.33	mg/kg	2.67		52.2	40-140		
Docosane	1.62		0.33	mg/kg	2.67		60.6	40-140		
Tetracosane	1.56		0.33	mg/kg	2.67		58.5	40-140		

Quality Control
(Continued)

Extractable Petroleum Hydrocarbons (MADEP-EPH) (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2K1235 - EPA 3546 (Continued)										
LCS (B2K1235-BS1)					Prepared: 11/23/22 Analyzed: 11/28/22					
Hexacosane	1.53		0.33	mg/kg	2.67		57.3	40-140		
Octacosane	1.60		0.33	mg/kg	2.67		60.2	40-140		
Triacontane	1.63		0.33	mg/kg	2.67		61.2	40-140		
Hexatriacontane	2.06		0.33	mg/kg	2.67		77.1	40-140		
Surrogate: Chlorooctadecane			*3.42*	mg/kg	*8.33*		*41.0*	*40-140*		
Surrogate: o-Terphenyl			*3.44*	mg/kg	*8.33*		*41.3*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*2.81*	mg/kg	*3.33*		*84.2*	*40-140*		
Surrogate: 2-Bromonaphthalene			*1.89*	mg/kg	*3.33*		*56.7*	*40-140*		
LCS Dup (B2K1235-BSD1)					Prepared: 11/23/22 Analyzed: 11/28/22					
Naphthalene	1.34		0.33	mg/kg	2.67		50.1	40-140	2.27	25
2-Methylnaphthalene	1.34		0.33	mg/kg	2.67		50.2	40-140	1.68	25
Phenanthrene	1.46		0.33	mg/kg	2.67		54.7	40-140	13.1	25
Acenaphthene	1.40		0.33	mg/kg	2.67		52.5	40-140	6.94	25
Acenaphthylene	1.34		0.33	mg/kg	2.67		50.2	40-140	4.58	25
Fluorene	1.35		0.33	mg/kg	2.67		50.4	40-140	2.20	25
Anthracene	1.58		0.33	mg/kg	2.67		59.2	40-140	12.8	25
Fluoranthene	1.60		0.33	mg/kg	2.67		60.1	40-140	16.4	25
Pyrene	1.67		0.33	mg/kg	2.67		62.7	40-140	19.7	25
Benzo(a)anthracene	1.66		0.33	mg/kg	2.67		62.4	40-140	20.4	25
Chrysene	1.79		0.33	mg/kg	2.67		67.1	40-140	21.1	25
Benzo(b)fluoranthene	1.69		0.33	mg/kg	2.67		63.5	40-140	20.6	25
Benzo(k)fluoranthene	1.77		0.33	mg/kg	2.67		66.5	40-140	0.413	25
Benzo(a)pyrene	1.66		0.33	mg/kg	2.67		62.3	40-140	22.0	25
Indeno(1,2,3-cd)pyrene	1.53		0.33	mg/kg	2.67		57.5	40-140	22.0	25
Dibenz(a,h)anthracene	1.62		0.33	mg/kg	2.67		60.9	40-140	20.0	25
Benzo(g,h,i)perylene	1.71		0.33	mg/kg	2.67		64.0	40-140	7.71	25
EPH_LCS_Aliphatic_C19-C36	15.2		0.00	mg/kg	21.3		71.0	40-140	16.8	25
EPH_LCS_Aliphatic_C9-C18	7.56		0.00	mg/kg	16.0		47.2	40-140	0.528	25
EPH_LCS_Aromatic_C11-C22	26.5		0.00	mg/kg	45.3		58.5	40-140	12.2	25
Nonane	0.94		0.33	mg/kg	2.67		35.2	30-140	5.38	25
Decane	1.18		0.33	mg/kg	2.67		44.1	40-140	7.42	25
Dodecane	1.32		0.33	mg/kg	2.67		49.5	40-140	7.05	25
Tetradecane	1.29		0.33	mg/kg	2.67		48.5	40-140	4.88	25
Hexadecane	1.34		0.33	mg/kg	2.67		50.1	40-140	4.82	25
Octadecane	1.49		0.33	mg/kg	2.67		55.8	40-140	10.1	25
Nonadecane	1.53		0.33	mg/kg	2.67		57.6	40-140	8.04	25
Eicosane	1.62		0.33	mg/kg	2.67		60.9	40-140	15.4	25
Docosane	1.77		0.33	mg/kg	2.67		66.6	40-140	9.40	25
Tetracosane	1.84		0.33	mg/kg	2.67		68.9	40-140	16.2	25
Hexacosane	1.87		0.33	mg/kg	2.67		70.0	40-140	20.1	25
Octacosane	1.94		0.33	mg/kg	2.67		72.6	40-140	18.8	25
Triacontane	2.10		0.33	mg/kg	2.67		78.7	40-140	25.0	25
Hexatriacontane	2.48		0.33	mg/kg	2.67		92.9	40-140	18.6	25
Surrogate: Chlorooctadecane			*4.39*	mg/kg	*8.33*		*52.7*	*40-140*		
Surrogate: o-Terphenyl			*4.47*	mg/kg	*8.33*		*53.7*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*2.87*	mg/kg	*3.33*		*86.0*	*40-140*		
Surrogate: 2-Bromonaphthalene			*2.15*	mg/kg	*3.33*		*64.5*	*40-140*		

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

2K1 4059L

nchester, CT 06040 ☐ 78 Interstate Drive, West Springfield, MA 01089
bull, CT 06611 ☐ 317 Iron Horse Way, Suite 204, Providence, RI 02908
olumbia, SC 29201 ☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☒ Other 1550 Main Street, Suite 400, Springfield, MA

CHAIN-OF-CUSTODY RECORD 36156

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ____ (days)
☐ 48-Hour* ☒ Standard (____ days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
Shutesbury Library ph II	Shutesbury, MA	20091032.A22	NETLAB

REPORT TO: Matt Kissane (MKissane@fando.com)
INVOICE TO: "
P.O. NO.: 170120091032.A22
Sampler's Signature: Clifford Coty Date: 11/11/22

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other ____

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	EPH Ranges & target Compounds	VPH Ranges & target Compounds	Lead	Hold for possible future analysis	Soil VOA Vial, ☒ methanol	Soil VOA Vial, ☐ water ☐ $Na(SO_4)_2$	Glass Soil Container (8) oz	Other:	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber (____) ml, ☐ As is ☐ H_2SO_4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H_2SO_4, ☐ 250 ml ☐ 500 ml	Plastic - HNO_3, 250 ml ☐ Filtered ☐ 0.45µ ☐ 10µ	Plastic - NaOH, 250 ml	Comments
					170122111 - 01	S	11/11/22	0915	X	X	X					2		1							
					- 02			0930	X	X	X					2		1							
					- 03			0950				X				2		1							
					- 04			1010				X				2		1							
					- 05			1050	X	X	X					2		1							
					- 06			1115	X	X	X					2		1							
					- 07			1135	X	X	X					2		1							
					- 08			1150	X	X	X					2		1							

Transfer Number	Relinquished By	Accepted By	Date	Time
1	Clifford Coty	FED Fridge	11/11/22	1430
2	Clifford Coty	billWard	11/14/22	1450
3	billWard		11/14/22	1740
4		MS	11/14/22	1740

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ____
____ Duplicates ____ Blanks (Item Nos:)
Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
Additional Comments:

MassDEP Analytical Protocol Certification Form

Laboratory Name: New England Testing Laboratory, Inc. Project #: 20091032.A22

Project Location: Shutesbury, MA RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s): 2K14059

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☐	MassDEP VPH (GC/PID/FID) CAM IV A ☒	8082 PCB CAM V A ☐	9014 Total Cyanide/PAC CAM VI A ☐	6860 Perchlorate CAM VIII B ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP VPH (GC/MS) CAM IV C ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	MassDEP EPH CAM IV B ☒	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	VPH, EPH, APH, and TO-15 only a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☒ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

***Data User Note*: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: _____ **Position:** Laboratory Director

Printed Name: Richard Warila **Date**: 11/29/2022

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 2L05028
Client Project: 20091032.A22 - Shutesbury Library

Report Date: 12-December-2022

Prepared for:

Matt Kissane
Fuss & O'Neill
317 Iron Horse Way
Providence, RI 02908

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 12/05/22. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 2L05028. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
2L05028-01	1701221202-01	Water	12/02/2022	12/05/2022
2L05028-02	1701221202-02	Water	12/02/2022	12/05/2022

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

1701221202-01 (Lab Number: 2L05028-01)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Lead	EPA 6010C
MADEP EPH	MADEP EPH
MADEP VPH	MADEP VPH
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 6010C
Vanadium	EPA 6010C
Zinc	EPA 6010C

1701221202-02 (Lab Number: 2L05028-02)

Analysis	Method
MADEP VPH	MADEP VPH

Method References

Method for the Determination of Extractable Petroleum Hydrocarbons, Rev. 2.1, Massachusetts Department of Environmental Protection, 2004

Method for the Determination of Volatile Petroleum Hydrocarbons, Rev. 2.1, Massachusetts Department of Environmental Protection, 2018

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Case Narrative

Sample Receipt:

The samples associated with this work order were received in appropriately cooled and preserved containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Exceptions: None

Analysis:

All samples were prepared and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control requirements and allowances. Results for all soil samples, unless otherwise indicated, are reported on a dry weight basis.

Exceptions: None

Results: Total Metals

Sample: 1701221202-01

Lab Number: 2L05028-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.005	mg/L	12/06/22	12/09/22
Arsenic	ND		0.01	mg/L	12/06/22	12/09/22
Barium	ND		0.005	mg/L	12/06/22	12/09/22
Beryllium	ND		0.005	mg/L	12/06/22	12/09/22
Cadmium	ND		0.005	mg/L	12/06/22	12/09/22
Chromium	ND		0.005	mg/L	12/06/22	12/09/22
Lead	ND		0.005	mg/L	12/06/22	12/09/22
Mercury	ND		0.0005	mg/L	12/07/22	12/07/22
Nickel	**0.006**		0.005	mg/L	12/06/22	12/09/22
Selenium	ND		0.01	mg/L	12/06/22	12/09/22
Silver	ND		0.005	mg/L	12/06/22	12/09/22
Vanadium	ND		0.005	mg/L	12/06/22	12/09/22
Zinc	**0.022**		0.020	mg/L	12/06/22	12/09/22
Thallium	**0.010**		0.005	mg/L	12/06/22	12/09/22

Volatile Petroleum Hydrocarbons
Sample: 1701221202-01 (2L05028-01)

SAMPLE INFORMATION

Matrix	Water		
Containers	Satisfactory		
Sample Preservation	Aqueous	pH<2	
	Soil or Sediment	NA	
		NA	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1			Client ID		1701221202-01	
Method for Target Analytes: MADEP VPH-18-2.1			Lab ID		2L05028-01	
VPH Surrogate Standards:			Date Collected		12/02/22	
PID: 2,5-Dibromotoluene			Date Received		12/05/22	
FID: 2,5-Dibromotoluene			% Moisture		NA	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	10X	1000	ug/l	**11800**	12/06/22 12:30
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	10X	1000	ug/l	**36600**	12/06/22 12:30
Benzene	C5-C8	1X	5.0	ug/l	<5.0	12/06/22 12:30
Ethylbenzene	C9-C12	10X	50.0	ug/l	**985**	12/06/22 12:30
Methyl t-butyl ether (MTBE)	C5-C8	1X	10.0	ug/l	<10.0	12/06/22 12:30
Naphthalene	NA	1X	10.0	ug/l	**161**	12/06/22 12:30
Toluene	C5-C8	10X	50.0	ug/l	**933**	12/06/22 12:30
m&p-Xylene	C9-C12	10X	100	ug/l	**2000**	12/06/22 12:30
o-Xylene	C9-C12	10X	100	ug/l	**770**	12/06/22 12:30
Total xylenes		10X	100	ug/l	**2770**	12/06/22 12:30
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	1X	100	ug/l	**10900**	12/06/22 12:30
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	1X	100	ug/l	**29500**	12/06/22 12:30
C9-C10 Aromatic Hydrocarbons [1]	NA	10X	1000	ug/l	**3420**	12/06/22 12:30
2,5-Dibromotoluene-PID				%	120	12/06/22 12:30
2,5-Dibromotoluene-FID				%	119	12/06/22 12:30
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Volatile Petroleum Hydrocarbons
Sample: 1701221202-02 (2L05028-02)

SAMPLE INFORMATION

Matrix	Water		
Containers	Satisfactory		
Sample Preservation	Aqueous	pH<2	
	Soil or Sediment	NA	
		NA	
		Received in air-tight container	
Temperature	Received on Ice Received at: 4+/-2 C°		

VPH ANALYTICAL RESULTS

Method for Ranges: MADEP VPH-18-2.1				Client ID	1701221202-02	
Method for Target Analytes: MADEP VPH-18-2.1				Lab ID	2L05028-02	
VPH Surrogate Standards:				Date Collected	12/02/22	
PID: 2,5-Dibromotoluene				Date Received	12/05/22	
FID: 2,5-Dibromotoluene				% Moisture	NA	
RANGE/TARGET ANALYTE	**Elution Range**	**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C5-C8 Aliphatic Hydrocarbons [1]	NA	1X	100	ug/l	<100	12/06/22 11:56
Unadjusted C9-C12 Aliphatic Hydrocarbons [1]	NA	1X	100	ug/l	<100	12/06/22 11:56
Benzene	C5-C8	1X	5.0	ug/l	<5.0	12/06/22 11:56
Ethylbenzene	C9-C12	1X	5.0	ug/l	<5.0	12/06/22 11:56
Methyl t-butyl ether (MTBE)	C5-C8	1X	10.0	ug/l	<10.0	12/06/22 11:56
Naphthalene	NA	1X	10.0	ug/l	<10.0	12/06/22 11:56
Toluene	C5-C8	1X	5.0	ug/l	<5.0	12/06/22 11:56
m&p-Xylene	C9-C12	1X	10.0	ug/l	<10.0	12/06/22 11:56
o-Xylene	C9-C12	1X	10.0	ug/l	<10.0	12/06/22 11:56
Total xylenes		1X	10.0	ug/l	<10.0	12/06/22 11:56
C5-C8 Aliphatic Hydrocarbons [1,2]	NA	1X	100	ug/l	<100	12/06/22 11:56
C9-C12 Aliphatic Hydrocarbons [1,3]	NA	1X	100	ug/l	<100	12/06/22 11:56
C9-C10 Aromatic Hydrocarbons [1]	NA	1X	100	ug/l	<100	12/06/22 11:56
2,5-Dibromotoluene-PID				%	96.9	12/06/22 11:56
2,5-Dibromotoluene-FID				%	98.7	12/06/22 11:56
Surrogate Acceptance Range				%	70-130	

[1] Hydrocarbon Range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range
[2] C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range
[3] C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons

Extractable Petroleum Hydrocarbons
Sample: 1701221202-01 (2L05028-01)

SAMPLE INFORMATION

Matrix	Water
Containers	Satisfactory
Aqueous Preservatives	pH<2
Temperature	Received on Ice Received at: 4+/-2 C°
Extraction Method	EPA Method 3510C

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 4-1.1				Client ID	1701221202-01	
Method for Target Analytes: MADEP EPH 4-1.1				Lab ID	2L05028-01	
EPH Surrogate Standards: Aliphatic: Chlorooctadecane Aromatic: o-Terphenyl				Date Collected	12/02/22	
				Date Received	12/05/22	
				Date Thawed	NA	
				Date Extracted	12/06/22	
EPH Fractionation Surrogates: (1) 2-Fluorobiphenyl (2) 2-Bromonaphthalene				Percent Moisture	NA	
RANGE/TARGET ANALYTE		**Dilution**	**RL**	**Units**	**Result**	**Analyzed**
Unadjusted C11-C22 Aromatic Hydrocarbons [1]		1X	100	ug/l	**358**	12/09/22 10:09
Diesel PAH Analytes	Naphthalene	1X	1.0	ug/l	**101**	12/09/22 10:09
	2-Methylnaphthalene	1X	1.0	ug/l	**23.0**	12/09/22 10:09
	Phenanthrene	1X	1.0	ug/l	<1.0	12/09/22 10:09
	Acenaphthene	1X	5.0	ug/l	<5.0	12/09/22 10:09
Other Target PAH Analytes	Acenaphthylene	1X	1.0	ug/l	<1.0	12/09/22 10:09
	Fluorene	1X	5.0	ug/l	<5.0	12/09/22 10:09
	Anthracene	1X	5.0	ug/l	<5.0	12/09/22 10:09
	Fluoranthene	1X	5.0	ug/l	<5.0	12/09/22 10:09
	Pyrene	1X	5.0	ug/l	<5.0	12/09/22 10:09
	Benzo(a)anthracene	1X	1.0	ug/l	<1.0	12/09/22 10:09
	Chrysene	1X	2.0	ug/l	<2.0	12/09/22 10:09
	Benzo(b)fluoranthene	1X	1.0	ug/l	<1.0	12/09/22 10:09
	Benzo(k)fluoranthene	1X	1.0	ug/l	<1.0	12/09/22 10:09
	Benzo(a)pyrene	1X	0.2	ug/l	<0.2	12/09/22 10:09
	Indeno(1,2,3-cd)pyrene	1X	0.5	ug/l	<0.5	12/09/22 10:09
	Dibenz(a,h)anthracene	1X	0.5	ug/l	<0.5	12/09/22 10:09
	Benzo(g,h,i)perylene	1X	5.0	ug/l	<5.0	12/09/22 10:09
C9-C18 Aliphatic Hydrocarbons [1]		1X	200	ug/l	**739**	12/08/22 19:31
C19-C36 Aliphatic Hydrocarbons [1]		1X	200	ug/l	<200	12/08/22 19:31
C11-C22 Aromatic Hydrocarbons [1,2]		1X	100	ug/l	**234**	12/09/22 10:09
Chlorooctadecane (Sample Surrogate)				%	58.9	12/08/22 19:31
o-Terphenyl (Sample Surrogate)				%	59.5	12/09/22 10:09
2-Fluorobiphenyl (Fractionation Surrogate)				%	81.0	12/09/22 10:09
2-Bromonaphthalene (Fractionation Surrogate)				%	60.4	12/09/22 10:09
Surrogate Acceptance Range [3]				%	40 - 140	

[1] Hydrocarbon range data excludes area counts of any surrogate(s) and/or internal standards eluting in that range.
[2] C11-C22 Aromatic Hydrocarbons excludes the concentration of Target PAH Analytes.
[3] See the case narrative in cases where a dash (-) is entered in the surrogate recovery block.

Quality Control

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0233 - Metals Digestion Waters										
Blank (B2L0233-BLK1)					Prepared: 12/06/22 Analyzed: 12/09/22					
Arsenic	ND		0.01	mg/L						
Zinc	ND		0.020	mg/L						
Vanadium	ND		0.005	mg/L						
Selenium	ND		0.01	mg/L						
Antimony	ND		0.005	mg/L						
Lead	ND		0.005	mg/L						
Nickel	ND		0.005	mg/L						
Chromium	ND		0.005	mg/L						
Cadmium	ND		0.005	mg/L						
Beryllium	ND		0.005	mg/L						
Barium	ND		0.005	mg/L						
Silver	ND		0.005	mg/L						
Thallium	ND		0.005	mg/L						
LCS (B2L0233-BS1)					Prepared: 12/06/22 Analyzed: 12/09/22					
Vanadium	0.950		0.005	mg/L	1.00		95.0	85-115		
Cadmium	0.909		0.005	mg/L	1.00		90.9	85-114		
Beryllium	0.192		0.005	mg/L	0.200		95.8	85-115		
Zinc	0.933		0.020	mg/L	1.00		93.3	85-115		
Barium	0.946		0.005	mg/L	1.00		94.6	85-115		
Selenium	0.18		0.01	mg/L	0.200		87.6	85-115		
Nickel	0.905		0.005	mg/L	1.00		90.5	85-112		
Arsenic	0.18		0.01	mg/L	0.200		91.7	85-115		
Silver	0.454		0.005	mg/L	0.400		114	85-115		
Antimony	1.03		0.005	mg/L	1.00		103	85-115		
Lead	0.898		0.005	mg/L	1.00		89.8	85-115		
Chromium	0.954		0.005	mg/L	1.00		95.4	85-115		
Thallium	0.883		0.005	mg/L	1.00		88.3	85-115		

Quality Control
(Continued)

Total Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0309 - Metals Cold-Vapor Mercury										
Blank (B2L0309-BLK1)					Prepared & Analyzed: 12/07/22					
Mercury	ND		0.0005	mg/L						
LCS (B2L0309-BS1)					Prepared & Analyzed: 12/07/22					
Mercury	0.0045		0.0005	mg/L	0.00500		89.1	85-115		

Quality Control
(Continued)

Volatile Petroleum Hydrocarbons (MADEP-VPH)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0215 - MADEP VPH										
Blank (B2L0215-BLK1)					Prepared & Analyzed: 12/06/22					
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND		100	ug/l						
Unadjusted C9-C12 Aliphatic Hydrocarbons	ND		100	ug/l						
Benzene	ND		5.0	ug/l						
Ethylbenzene	ND		5.0	ug/l						
Methyl t-butyl ether (MTBE)	ND		10.0	ug/l						
Naphthalene	ND		10.0	ug/l						
Toluene	ND		5.0	ug/l						
m&p-Xylene	ND		10.0	ug/l						
o-Xylene	ND		10.0	ug/l						
Total xylenes	ND		10.0	ug/l						
C5-C8 Aliphatic Hydrocarbons	ND		100	ug/l						
C9-C12 Aliphatic Hydrocarbons	ND		100	ug/l						
C9-C10 Aromatic Hydrocarbons	ND		100	ug/l						
Surrogate: 2,5- Dibromotoluene-PID			*44.9*	ug/l	*50.0*		*89.9*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*47.4*	ug/l	*50.0*		*94.9*	*70-130*		
LCS (B2L0215-BS1)					Prepared & Analyzed: 12/06/22					
Benzene	47.8		5.0	ug/l	50.0		95.6	70-130		
Ethylbenzene	49.7		5.0	ug/l	50.0		99.4	70-130		
Methyl t-butyl ether (MTBE)	48.4		10.0	ug/l	50.0		96.9	70-130		
Naphthalene	38.8		10.0	ug/l	50.0		77.6	70-130		
Toluene	48.8		5.0	ug/l	50.0		97.6	70-130		
m&p-Xylene	102		10.0	ug/l	100		102	70-130		
2-Methylpentane	50.8		5.0	ug/l	50.0		102	70-130		
n-Nonane	48.9		5.0	ug/l	50.0		97.9	70-130		
o-Xylene	51.3		10.0	ug/l	50.0		103	70-130		
Decane	54.3		5.0	ug/l	50.0		109	70-130		
n-Butylcylohexane	53.3		5.0	ug/l	50.0		107	70-130		
n-Pentane	48.6		5.0	ug/l	50.0		97.3	70-130		
1,2,4-Trimethylbenzene	56.3		10.0	ug/l	50.0		113	70-130		
VPH_LCS_Aliphatic_C5-C8	150		5.0	ug/l	150		99.7	70-130		
VPH_LCS_Aliphatic_C9-C12	108		10.0	ug/l	100		108	70-130		
VPH_LCS_Aromatic_C9-C10	56.3		10.0	ug/l	50.0		113	70-130		
Surrogate: 2,5- Dibromotoluene-PID			*39.1*	ug/l	*50.0*		*78.2*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*39.9*	ug/l	*50.0*		*79.8*	*70-130*		

Quality Control
(Continued)

Volatile Petroleum Hydrocarbons (MADEP-VPH) (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0215 - MADEP VPH (Continued)										
LCS Dup (B2L0215-BSD1)					Prepared & Analyzed: 12/06/22					
Benzene	48.2		5.0	ug/l	50.0		96.5	70-130	0.958	25
Ethylbenzene	50.4		5.0	ug/l	50.0		101	70-130	1.38	25
Methyl t-butyl ether (MTBE)	49.4		10.0	ug/l	50.0		98.8	70-130	1.94	25
Naphthalene	42.5		10.0	ug/l	50.0		84.9	70-130	9.03	25
Toluene	49.4		5.0	ug/l	50.0		98.9	70-130	1.32	25
m&p-Xylene	104		10.0	ug/l	100		104	70-130	1.56	25
2-Methylpentane	49.4		5.0	ug/l	50.0		98.9	70-130	2.63	25
o-Xylene	52.3		10.0	ug/l	50.0		105	70-130	2.05	25
n-Nonane	49.3		5.0	ug/l	50.0		98.6	70-130	0.713	25
Decane	56.9		5.0	ug/l	50.0		114	70-130	4.66	25
n-Butylcylohexane	52.4		5.0	ug/l	50.0		105	70-130	1.63	25
n-Pentane	48.0		5.0	ug/l	50.0		95.9	70-130	1.39	25
1,2,4-Trimethylbenzene	57.6		10.0	ug/l	50.0		115	70-130	2.21	25
VPH_LCS_Aliphatic_C5-C8	147		5.0	ug/l	150		97.8	70-130	1.97	25
VPH_LCS_Aliphatic_C9-C12	109		10.0	ug/l	100		109	70-130	1.60	25
VPH_LCS_Aromatic_C9-C10	57.6		10.0	ug/l	50.0		115	70-130	2.21	25
Surrogate: 2,5- Dibromotoluene-PID			*42.5*	ug/l	*50.0*		*84.9*	*70-130*		
Surrogate: 2,5- Dibromotoluene-FID			*43.8*	ug/l	*50.0*		*87.7*	*70-130*		

Extractable Petroleum Hydrocarbons (MADEP-EPH)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0217 - Sep-Funnel-extraction										
Blank (B2L0217-BLK1)					Prepared: 12/06/22 Analyzed: 12/08/22					
Unadjusted C11-C22 Aromatic Hydrocarbons	ND		100	ug/l						
Naphthalene	ND		1.0	ug/l						
2-Methylnaphthalene	ND		1.0	ug/l						
Phenanthrene	ND		1.0	ug/l						
Acenaphthene	ND		5.0	ug/l						
Acenaphthylene	ND		1.0	ug/l						
Fluorene	ND		5.0	ug/l						
Anthracene	ND		5.0	ug/l						
Fluoranthene	ND		5.0	ug/l						
Pyrene	ND		5.0	ug/l						
Benzo(a)anthracene	ND		1.0	ug/l						
Chrysene	ND		2.0	ug/l						
Benzo(b)fluoranthene	ND		1.0	ug/l						
Benzo(k)fluoranthene	ND		1.0	ug/l						
Benzo(a)pyrene	ND		0.2	ug/l						
Indeno(1,2,3-cd)pyrene	ND		0.5	ug/l						
Dibenz(a,h)anthracene	ND		0.5	ug/l						
Benzo(g,h,i)perylene	ND		5.0	ug/l						
C9-C18 Aliphatic Hydrocarbons	ND		200	ug/l						
C19-C36 Aliphatic Hydrocarbons	ND		200	ug/l						
C11-C22 Aromatic Hydrocarbons	ND		100	ug/l						
Surrogate: Chlorooctadecane			*72.0*	ug/l	*125*		*57.6*	*40-140*		
Surrogate: o-Terphenyl			*50.7*	ug/l	*125*		*40.6*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*37.8*	ug/l	*50.0*		*75.6*	*40-140*		
Surrogate: 2-Bromonaphthalene			*34.4*	ug/l	*50.0*		*68.8*	*40-140*		
LCS (B2L0217-BS1)					Prepared: 12/06/22 Analyzed: 12/08/22					
Naphthalene	16.5		1.0	ug/l	40.0		41.3	40-140		
2-Methylnaphthalene	16.2		1.0	ug/l	40.0		40.4	40-140		
Phenanthrene	17.4		1.0	ug/l	40.0		43.5	40-140		
Acenaphthene	17.2		5.0	ug/l	40.0		42.9	40-140		
Acenaphthylene	16.4		1.0	ug/l	40.0		40.9	40-140		
Fluorene	16.4		5.0	ug/l	40.0		40.9	40-140		
Anthracene	18.2		5.0	ug/l	40.0		45.6	40-140		
Fluoranthene	20.9		5.0	ug/l	40.0		52.4	40-140		
Pyrene	21.2		5.0	ug/l	40.0		53.0	40-140		
Benzo(a)anthracene	22.2		1.0	ug/l	40.0		55.6	40-140		
Chrysene	24.5		2.0	ug/l	40.0		61.3	40-140		
Benzo(b)fluoranthene	22.8		1.0	ug/l	40.0		57.1	40-140		
Benzo(k)fluoranthene	24.3		1.0	ug/l	40.0		60.8	40-140		
Benzo(a)pyrene	22.4		0.2	ug/l	40.0		56.0	40-140		
Indeno(1,2,3-cd)pyrene	20.8		0.5	ug/l	40.0		52.0	40-140		
Dibenz(a,h)anthracene	21.7		0.5	ug/l	40.0		54.3	40-140		
Benzo(g,h,i)perylene	23.9		5.0	ug/l	40.0		59.8	40-140		
Nonane	13.8		5.0	ug/l	40.0		34.4	30-140		
Decane	17.6		5.0	ug/l	40.0		44.1	40-140		
Dodecane	17.9		5.0	ug/l	40.0		44.6	40-140		
Tetradecane	17.3		5.0	ug/l	40.0		43.2	40-140		
Hexadecane	17.6		5.0	ug/l	40.0		44.0	40-140		
Octadecane	20.9		5.0	ug/l	40.0		52.3	40-140		
Nonadecane	22.9		5.0	ug/l	40.0		57.2	40-140		
Eicosane	24.9		5.0	ug/l	40.0		62.4	40-140		
Docosane	27.8		5.0	ug/l	40.0		69.4	40-140		
Tetracosane	29.0		5.0	ug/l	40.0		72.6	40-140		
Hexacosane	29.1		5.0	ug/l	40.0		72.8	40-140		
Octacosane	28.5		5.0	ug/l	40.0		71.2	40-140		
Triacontane	27.9		5.0	ug/l	40.0		69.8	40-140		

Extractable Petroleum Hydrocarbons (MADEP-EPH) (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2L0217 - Sep-Funnel-extraction (Continued)										
LCS (B2L0217-BS1)					Prepared: 12/06/22 Analyzed: 12/08/22					
Hexatriacontane	28.3		5.0	ug/l	40.0		70.7	40-140		
EPH_LCS_Aliphatic_C19-C36	218		0.0	ug/l	320		68.2	40-140		
EPH_LCS_Aliphatic_C9-C18	105		0.0	ug/l	240		43.8	40-140		
EPH_LCS_Aromatic_C11-C22	343		0.0	ug/l	680		50.5	40-140		
Surrogate: Chlorooctadecane			*76.0*	ug/l	*125*		*60.8*	*40-140*		
Surrogate: o-Terphenyl			*58.8*	ug/l	*125*		*47.0*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*35.5*	ug/l	*50.0*		*71.0*	*40-140*		
Surrogate: 2-Bromonaphthalene			*33.8*	ug/l	*50.0*		*67.6*	*40-140*		
LCS Dup (B2L0217-BSD1)					Prepared: 12/06/22 Analyzed: 12/08/22					
Naphthalene	16.7		1.0	ug/l	40.0		41.6	40-140	0.783	25
2-Methylnaphthalene	17.2		1.0	ug/l	40.0		43.0	40-140	6.11	25
Phenanthrene	19.2		1.0	ug/l	40.0		48.0	40-140	9.73	25
Acenaphthene	18.1		5.0	ug/l	40.0		45.2	40-140	5.17	25
Acenaphthylene	17.3		1.0	ug/l	40.0		43.2	40-140	5.47	25
Fluorene	17.6		5.0	ug/l	40.0		43.9	40-140	7.08	25
Anthracene	20.2		5.0	ug/l	40.0		50.6	40-140	10.3	25
Fluoranthene	23.3		5.0	ug/l	40.0		58.4	40-140	10.8	25
Pyrene	23.7		5.0	ug/l	40.0		59.2	40-140	11.0	25
Benzo(a)anthracene	24.6		1.0	ug/l	40.0		61.4	40-140	9.95	25
Chrysene	26.8		2.0	ug/l	40.0		67.1	40-140	9.03	25
Benzo(b)fluoranthene	25.0		1.0	ug/l	40.0		62.6	40-140	9.19	25
Benzo(k)fluoranthene	26.6		1.0	ug/l	40.0		66.4	40-140	8.76	25
Benzo(a)pyrene	24.6		0.2	ug/l	40.0		61.5	40-140	9.41	25
Indeno(1,2,3-cd)pyrene	22.7		0.5	ug/l	40.0		56.7	40-140	8.51	25
Dibenz(a,h)anthracene	24.1		0.5	ug/l	40.0		60.2	40-140	10.4	25
Benzo(g,h,i)perylene	25.7		5.0	ug/l	40.0		64.2	40-140	7.02	25
Nonane	12.5		5.0	ug/l	40.0		31.2	30-140	9.74	25
Decane	16.9		5.0	ug/l	40.0		42.2	40-140	4.52	25
Dodecane	16.3		5.0	ug/l	40.0		40.7	40-140	9.26	25
Tetradecane	16.6		5.0	ug/l	40.0		41.4	40-140	4.19	25
Hexadecane	17.0		5.0	ug/l	40.0		42.4	40-140	3.64	25
Octadecane	19.8		5.0	ug/l	40.0		49.6	40-140	5.30	25
Nonadecane	21.7		5.0	ug/l	40.0		54.2	40-140	5.30	25
Eicosane	23.6		5.0	ug/l	40.0		59.0	40-140	5.48	25
Docosane	26.1		5.0	ug/l	40.0		65.2	40-140	6.32	25
Tetracosane	27.1		5.0	ug/l	40.0		67.8	40-140	6.76	25
Hexacosane	27.2		5.0	ug/l	40.0		68.0	40-140	6.82	25
Octacosane	26.5		5.0	ug/l	40.0		66.2	40-140	7.32	25
Triacontane	25.9		5.0	ug/l	40.0		64.8	40-140	7.36	25
Hexatriacontane	26.0		5.0	ug/l	40.0		65.0	40-140	8.33	25
EPH_LCS_Aliphatic_C19-C36	204		0.0	ug/l	320		63.8	40-140	6.76	25
EPH_LCS_Aliphatic_C9-C18	99.0		0.0	ug/l	240		41.3	40-140	5.94	25
EPH_LCS_Aromatic_C11-C22	373		0.0	ug/l	680		54.9	40-140	8.40	25
Surrogate: Chlorooctadecane			*72.5*	ug/l	*125*		*58.0*	*40-140*		
Surrogate: o-Terphenyl			*65.7*	ug/l	*125*		*52.5*	*40-140*		
Surrogate: 2-Fluorobiphenyl			*39.6*	ug/l	*50.0*		*79.2*	*40-140*		
Surrogate: 2-Bromonaphthalene			*36.6*	ug/l	*50.0*		*73.2*	*40-140*		

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

FUSS & O'NEILL
(860) 646-2469 • www.FandO.com
☐ 146 Hartford Road, Manc
☐ 56 Quarry Road, Trumbu
☐ 1419 Richland Street, Col

2 L 0 5028 J

)8
☒ Other 1550 Main Street, Suite 400, Springfield MA

CHAIN-OF-CUSTODY RECORD 36169

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other _____ (days)
☐ 48-Hour* ☒ Standard (____ days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
Shutesbury Library ph II	Shutesbury, MA	20091032.A22	NETLAB

REPORT TO: Matthew Kissane (mkissane@fando.com)
INVOICE TO: 11 11
P.O. No.: 170120091032.A22
Sampler's Signature: Clifford Otey Date: 12/2/22

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other X = Trip Blank

Analysis Request / Containers

Item No.	Transfer Check 1 2 3 4	Sample Number	Source Code	Date Sampled	Time Sampled	CAM 14 Metals by USEPA 6010/7471	EPH and Target Compounds	VPH and Target Compounds	Soil VOA Vial, ☐ methanol	Soil VOA Vial, ☐ water ☐ $Na(SO_4)_2$	Glass Soil Container ( ) oz	Other:	Other:	Water VOA Vial, ☐ As is ☒ HCl	Glass Amber (40cc) ml, ☐ As is ☒ HCl	Plastic - As is, ☐ 250 ml ☐ 500 ml ☐ 1000 ml	Plastic - H_2SO_4, ☐ 250 ml ☐ 500 ml ☒ HCl	Plastic - HNO_3, 250 ml ☐ 0.45µ ☐ 10µ	Plastic - NaOH, 250 ml	Comments
1		170122 1202 - 01	MW	12/2/22	1150	X	X	X						3	1		1			
2		↓ - 02	X	↓	1200			X						2						Trip Blank

Transfer Number	Relinquished By	Accepted By	Date	Time
1	Clifford Otey	FRO FRIDGE	12/2/22	1345
2			12/5	1504
3			12/5	1749
4			12/5	1740

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other _____
____ Duplicates ____ Blanks (Item Nos:)
Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
Massachusetts DEP methodology for EPH & VPH
Additional Comments: Metals by USEPA methods 6010/7471

MassDEP Analytical Protocol Certification Form

Laboratory Name: New England Testing Laboratory, Inc. Project #: 20091032.A22

Project Location: Shutesbury, MA RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
2L05028

Matrices: ☒ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☒	MassDEP VPH (GC/PID/FID) CAM IV A ☒	8082 PCB CAM V A ☐	9014 Total Cyanide/PAC CAM VI A ☐	6860 Perchlorate CAM VIII B ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP VPH (GC/MS) CAM IV C ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	MassDEP EPH CAM IV B ☒	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	VPH, EPH, APH, and TO-15 only a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☒ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

***Data User Note*: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: _____ **Position:** Laboratory Director

Printed Name: Richard Warila **Date**: 12/12/2022

Appendix E

Conceptual Phase II Scope of Work

FUSS & O'NEILL

MEMORANDUM

TO: MassDEP

FROM: Timothy Clinton, CPG, LSP

DATE: January 27, 2023

RE: Phase II Conceptual Scope of Work
66 Leverett Road, Shutesbury MA
RTN 3-21489

In 2021, a release of oil and hazardous materials (OHM), including VPH Ranges in soil, was identified in the vicinity of a former Air Force very high frequency omni-directional range (VOR) facility including a radio tower located on the southern portion of the property at 66 Leverett Road, Shutesbury, Massachusetts (the Site). In January 2022, the disposal site was reported to MassDEP. Concurrent to this document, the disposal site is being classified Tier I due to confirmed groundwater impacts proximal to private drinking water wells.

The conceptual Phase II Scope of Work to support comprehensive characterization of the nature and extent of the release condition includes the following elements:

- Quarterly groundwater monitoring using low-flow procedures is planned to begin in Q1 2023 to assess the nature and extent, as well as seasonal variation, for petroleum and metals impacts in groundwater. There are currently five monitoring wells used to characterize the Disposal Site and the results of the initial groundwater assessment were presented in the accompanying Phase I ISI Report. Future data will likely be used to support exposure point concentration (EPC) calculations and characterization or risk to human and environmental receptors.
- Groundwater monitoring activities will include measurement of water table elevations and hydraulic gradient to evaluate fluctuations in groundwater flow direction relative to nearby private drinking water wells.
- Visual inspection of wetlands and surface water features adjacent to the Disposal Site will be conducted to observe the presence or absence of petroleum impacts (i.e. sheening) concurrent to quarterly groundwater monitoring activities. Visual observations will be photographed and documented. If evidence of contaminant discharge to surface water receptors is identified, surface water sampling may be conducted.
- The installation of additional groundwater monitoring wells to the existing monitoring well network may be warranted based on the results of future groundwater monitoring activities.

It is anticipated that quarterly groundwater monitoring, and installation of additional groundwater monitoring wells, if required, will be conducted in 2023. The need for further investigatory and/or remedial response actions will be evaluated at the conclusion of a full year of monitoring activities. It is anticipated that the results of the monitoring activities will be documented in a future Phase II Comprehensive Site Assessment.

Appendix F

Public Notice Letters

NOTICE OF INITIAL SITE INVESTIGATION AND TIER I CLASSIFICATION

66 Leverett Road, Shutesbury, MA
RTN 1-21489

A release of hazardous material has occurred at this location, which is a disposal site as defined by M.G.L. c. 21E, § 2 and the Massachusetts Contingency Plan, 310 CMR 40.0000. To evaluate the release, a Phase I Initial Site Investigation was performed pursuant to 310 CMR 40.0480. As a result of this investigation, the site has been classified as Tier I pursuant to 310 CMR 40.0500**.** On January 28, 2023, the Town of Shutesbury (the Owner) filed a Tier I Classification Submittal with the Department of Environmental Protection (MassDEP). To obtain more information on this disposal site, please contact:

Ms. Rebecca Torres, Town Administrator
Town of Shutesbury
1 Cooleyville Road, Shutesbury, MA 01072
413-259-1214
Email: TownAdmin@shutesbury.org

The Tier Classification and an associated Phase I Initial Site Investigation Report documenting the site history and extents of contamination was submitted electronically, and may be viewed by searching for RTN 1-21489 at the following website:

Massachusetts Department of Environmental Protection Reportable Releases Look Up https://eeaonline.eea.state.ma.us/Portal/#!/search/wastesite.

Additional public involvement opportunities are available under 310 CMR 40.1403(9) and 310 CMR 40.1404.

FUSS & O'NEILL

January 28, 2023

Catherine Hilton
Chair, Town of Shutesbury Board of Health
P.O. Box 216
Shutesbury, MA 01702

Re: **RTN 1-21489**
Notice – Tier Classification and Phase I Initial Site Investigation
66 Leverett Road, Shutesbury, MA

Dear Ms. Hilton:

Fuss & O'Neill, Inc. (Fuss & O'Neill) has prepared this letter, on behalf of the Town of Shutesbury, to provide notice that, in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0480), a *Phase I Initial Site Investigation (ISI) & Tier I Classification* has been submitted to the Massachusetts Department of Environmental Protection (MassDEP) for the hazardous material release identified by Release Tracking Number (RTN) 1-21489 at the above-referenced property (the Site). The disposal site was identified after the completion of a Limited Subsurface Assessment completed at the property by O'Reilly, Talbot, and Okun Associates of Springfield, Massachusetts in October 2021.

The *Phase I ISI & Tier I Classification* documenting the Site conditions was submitted electronically and may be viewed by searching for RTN 1-21489 at the MassDEP online file viewer, https://eeaonline.eea.state.ma.us/Portal/#!/search/wastesite

A copy of the report's executive summary and the disposal site map from the *Phase I ISI & Tier I Classification* are attached to this letter. Also attached is a copy of the public notice to be published in the Hampshire Gazette.

Sincerely,

Timothy Clinton, CPG, LSP
LSP of Record

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