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MassDEP RTN 3-18126

Revised Phase II Comprehensive Site Assessment and Revised Tier Classification

Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts

Submitted to:

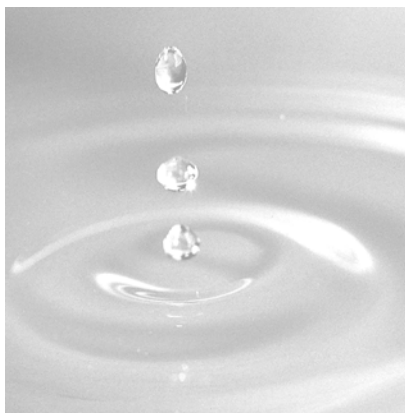
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Executive Summary

GEI Consultants, Inc., on behalf of the City of Lawrence, prepared this Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) Revised Phase II Comprehensive Site Assessment (CSA) and Revised Tier Classification for the disposal site identified by release tracking number (RTN) 3-18126 (the Site). The Site is currently classified as Tier I. The Site includes the 207 Marston Street property in Lawrence, Massachusetts (the Property), a portion of a Massachusetts Department of Transportation (MassDOT) easement east of the Property, and portions of residential properties that abut the Property to the north.

The City of Lawrence acquired the Property in May 2016 through foreclosure of tax title. The City is planning to sell the Property for future development and is conducting response actions as a “Municipality with Exempt Status” to prepare the Property for sale. The City is not a Responsible Party (RP) or Potentially Responsible Party (PRP) for the Site. PRPs identified for the Site include American Recycling, Inc. and First Lawrence Financial, LLC.

The Site was classified as a Tier IC Site in May 2001. A Phase II CSA and a Phase III Remedial Action Plan (RAP) were submitted by others in October 2004. However, the selected remedy was not implemented and neither a Temporary nor Permanent Solution Statement has been submitted. Since submittal of the 2004 Phase II and III reports, additional response actions have been conducted by RPs/PRPs, the U.S. Environmental Protection Agency (EPA), and the City of Lawrence. The City of Lawrence has received grants from EPA and other organizations to conduct response actions.

The purpose of this report is to update the MCP Phase II CSA to incorporate data collected since the 2004 Phase II and III reports were submitted; evaluate the risks posed by Property conditions to human health, public welfare, safety, and the environment; reclassify the Site to Tier II; and document that the City of Lawrence is a “Municipality with Exempt Status” undertaking response actions.

Site Description

The Site includes 207 Marston Street (the Property); a portion of the MassDOT easement for Interstate I-495 easement east of the Property; and portions of residential properties abutting the Property to the north.

The Property is 14-acres subdivided into two lots (Lots 1 and 2) owned by the City of Lawrence in a mixed-use area of Lawrence, Massachusetts. The Property is abutted by residential properties to the north, commercial properties to south, an elementary school across Marston Street to the west, and I-495 to the east. The Property is vacant, and access is restricted by a

chain link fence. A portion of the Property is paved and developed with buildings and concrete pads formerly used when the Property was operated as a metals recycling facility. However, most of the Property is unpaved and overgrown with native vegetation.

Background

The Site was initially identified as a result of subsurface investigations conducted as part of an Environmental Site Assessment prepared in 1998 that indicated the presence of polychlorinated biphenyls (PCBs) in surface soil at concentrations representing a potential Imminent Hazard (IH) condition. The Massachusetts Department of Environmental Protection (MassDEP) assigned RTN 3-18126 in March 1999 and required that an Immediate Response Action (IRA) be conducted to address the potential IH Condition.

The IRA included installation of a fence at the Property perimeter to restrict access and eliminate the IH Condition. Subsequent investigations were conducted to evaluate the nature and extent of contamination, and MCP Phase II CSA and Phase III RAP reports prepared by Weston Solutions, Inc. were submitted in October 2004.

Because PCBs at concentrations greater than 50 parts per million (ppm) were detected in Site soil, in addition to compliance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000), assessment and cleanup is also subject to the requirements of the Toxic Substances Control Act (TSCA; 40 CFR 761) and EPA approval. Therefore, the 2004 Phase II CSA and Phase III RAP were also submitted to EPA in 2004 for approval. Supplemental PCB investigations were conducted in 2005 to address data gaps identified by EPA during its review of the Phase II and III reports. EPA conducted additional investigations in 2010, and a targeted removal was conducted by a PRP in 2011 as directed by EPA. In 2011, EPA conducted removal actions on some of the residential properties along Hoffman Ave, north of the Property. In 2016, EPA conducted a Targeted Brownfields Assessment (TBA) to fill additional data gaps. In 2018, EPA conducted a targeted removal action to address elevated levels of PCBs in soil on the Lot 2 portion of the Property. In 2019 and 2020 GEI, on behalf of the City of Lawrence, conducted limited soil investigations on the Lot 1 and Lot 2 portions of the Property to delineate areas requiring cleanup.

Nature and Extent of Contamination

Site soil, and to a much lesser extent groundwater, is contaminated because of historic uses, including past use as a metals recycling facility. The primary contaminants of concern in soil are PCBs, metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Low levels of volatile organic compounds (VOCs) are also present in soil. Soil contamination is largely limited to the upper three or four feet of fill. Contaminant concentrations are significantly higher on the eastern portion of the Property (Lot 2) than on the western portion (Lot 1). Contamination is also in soil piles on Lot 2 and throughout a soil

berm located at the eastern and southeastern limits of the Property. Shallow soil along a portion of the northern boundary of the Property, which abuts a residential neighborhood, was excavated in 2011 to mitigate potential residential exposures to contaminants in surface soil on that portion of the Site. The excavated soil was placed in a constructed soil consolidation area on the southern portion of the Property. Contaminated soil on some of the residential properties along Hoffman Avenue was also removed.

Risk Characterization

We conducted a combined Method 1 and Method 3 Risk Characterization (Risk Characterization) to evaluate risk to current and potential future receptors, public welfare, safety, and the environment at the Property. As part of the exposure assessment performed for the Risk Characterization, we assumed that an Activity and Use Limitation (AUL) would be implemented to restrict future single-family residential use of the Property.

Based on the results of the Risk Characterization we concluded:

- Conditions at the Property pose a significant risk of harm to human health for current and future human receptors.
- Conditions at the Property pose a risk of harm to public welfare under future conditions due to the presence of a PCB hot spot in soil.
- Conditions at the Property pose a potential risk of harm to public safety due to the presence of vacant buildings in varying states of disrepair; however, the Property is fenced, gated, and locked to restrict access.
- A condition of NSR of harm to the environment exists at the Property; however, risk of harm to environmental receptors in the Merrimack River has not been fully evaluated.
- Maintenance of a fence around the perimeter of the Site is required to eliminate the Imminent Hazard posed by the presence of greater than 10 ppm PCBs in soil within one foot of the ground surface.

Revised Tier Classification and Re-establishment of Response Action Deadlines

With the installation and maintenance of a fence at the Property perimeter, there is no longer an Imminent Hazard, and the Site does not meet any of the Tier I Criteria. Therefore, the Site is being reclassified as a Tier II Site. In addition, the City of Lawrence is filing as a “Municipality with Exempt Status” documenting that it is undertaking response actions but is not an RP or PRP.

With this filing, the City is requesting that the response action deadlines be re-established and calculated from the effective date of this Revised Tier Classification.

1. Introduction

On behalf of the City of Lawrence, GEI Consultants, Inc. prepared this Revised Phase II Comprehensive Site Assessment (CSA) and Revised Tier Classification for the former Tombarello disposal site in Lawrence, Massachusetts (Fig. 1), which includes the 207 Marston Street property (the Property); a portion of the Massachusetts Department of Transportation (MassDOT) I-495 easement east of the Property; and a portion of residential properties abutting the Property to the north (the Site; Fig. 2). The Massachusetts Department of Environmental Protection (MassDEP) has assigned release tracking number (RTN) 3-18126 to the Site. A Phase II CSA Report was submitted in 2004 by Weston Solutions, Inc., which was retained by First Lawrence Financial, LLC on behalf of American Recycling of Massachusetts, Inc.

This report was prepared to meet the requirements of the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). The original MassDEP Comprehensive Response Action Transmittal Form (BWSC108), Tier Classification Transmittal Form (BWSC107) and Other Person Certification Transmittal Form (BWSC-107D) were submitted electronically and copies are in Appendix A.

In accordance with the public involvement requirements of 310 CMR 40.1403(3)(e), letters were sent to the City of Lawrence Chief Municipal Officer and Public Health Department notifying them of the availability of this report and of the submittal of a Revised Tier Classification from Tier I to Tier II. Copies of the letters are in Appendix B. In accordance with the public involvement requirements of 310 CMR 40.1403(6), a public notice informing the public of the Revised Tier Classification will be published in a local newspaper within seven days of this filing. A copy of the notice to be published is in Appendix B.

1.1 Municipality with Exempt Status and Potentially Responsible Parties

The City of Lawrence is a Municipality with Exempt Status under M.G.L. Chapter 21E. The City acquired the Property on May 9, 2016 through tax foreclosure; did not contribute to releases at the Site; and is working to divest itself of ownership of the Property. The City meets the requirements of M.G.L. Chapter 21E, Section 2(d) and is therefore not a Potentially Responsible Party (PRP) for the Site. The City is also considered an Eligible Person under Chapter 206 of the Brownfields Act and is responsible only for the cleanup to MassDEP standards of soil contamination within its property boundaries.

We understand that the PRPs for the Site include American Recycling of Massachusetts, Inc. and First Lawrence Financial, LLC as former Property owners and/or operators.

1.2 Purpose

The purpose of this report is to document:

- The additional investigations and response actions conducted since a Phase II CSA was submitted in September 2004.
- The Site no longer meets the Tier I Criteria in 310 CMR 40.0520(2) and the Site can be reclassified as Tier II.
- The results of a Risk Characterization prepared by GEI to evaluate the risks posed by Property conditions to human health, public welfare, safety, and the environment.

1.3 Conceptual Site Model

This Conceptual Site Model (CSM) was developed to describe release mechanisms, contaminant distribution, and potential exposure pathways associated with the Site. The CSM is based on the investigation data documented in this report.

1.3.1 Site Description

The Site includes the 207 Marston Street property (the Property); a portion of the MassDOT I-495 easement east of the Property; and a portion of residential properties that abut the Property to the north (Fig. 2). The Site is in a mixed-use area of Lawrence, Massachusetts with residential properties to the north, commercial properties to the south, an elementary school across Marston Street to the west, and Interstate 495 to the east.

The Property is approximately 14-acres and in December 2016 was sub-divided into two lots, Lot 1 and Lot 2 (Fig. 2). Lot 1 is a 2.6-acre parcel to the west and Lot 2 is an 11.4-acre parcel to the east. The portion of the MassDOT easement that is within the Site is approximately 0.4 acres and includes the soil berm. Approximately 0.4 acres of four residential properties north of the Property are part of the Site.

The Property is vacant, and access is restricted by a chain link fence. A small portion of the Property (Lot 1) is paved; however, most of the Property is unpaved and overgrown with native vegetation. Several soil and scrap material piles are located throughout the Property, primarily on Lot 2. An earthen berm about 10 to 20 feet high is located along the eastern and southern Property boundaries. The berm at the eastern Property boundary extends onto the I-495 easement.

1.3.2 Site History Overview

A metals recycling facility (John C. Tombarello & Sons followed by American Recycling of Massachusetts, Inc.), operated at the Property from about 1941 through 2001. The Property

is developed with former industrial buildings and a former residential building, in varying states of disrepair.

1.3.3 Regulatory Status

RTN 3-18126 is the primary RTN for the Site originally assigned by MassDEP in 1999 following an August 1998 Environmental Site Assessment (ESA) report prepared by W.Z. Baumgartner & Associates, Inc. The Site was classified as a Tier IC Site in May 2001. A Phase II CSA and a Phase III RAP were submitted to MassDEP in October 2004. In accordance with the timelines for conducting response actions under the MCP, either a Permanent or Temporary Solution, or Tier Classification Extension was required by 2005. However, this deadline was not met, and the Site is currently out of compliance under the MCP.

Because PCBs at concentrations greater than 50 parts per million (ppm) were detected in Site soil, in addition to compliance with the MCP, assessment and cleanup is also subject to the requirements of the Toxic Substances Control Act (TSCA; 40 CFR 761) and EPA approval.

1.3.4 Response Actions Conducted to Date

Site investigations conducted in 1998 identified PCBs greater than 10 parts per million (ppm) in near surface soil within 500 feet of residences, indicating a potential Imminent Hazard (IH) condition. An Immediate Response Action (IRA), which included collecting soil and groundwater samples, removing a contaminated soil stockpile, and installing a fence around the Property perimeter, was conducted in 1999 to address the potential IH condition and the IRA was closed.

Between 2003 and 2016 additional investigations were conducted including soil, scrap metal, building materials and surface soil sampling for PCBs, polycyclic aromatic hydrocarbons (PAHs), and metals. The 2010 investigation included collecting surface soil samples from across the Property on an approximately 50-foot grid.

In 2011, First Lawrence Financial, a PRP, was required by EPA to conduct a targeted removal of the upper one foot of soil from a limited area along the northern Property boundary, adjacent to the residential properties along Hoffman Avenue. The excavated soil was placed in an on-site soil consolidation area on the southern portion of the Property. In 2011, EPA conducted removal actions on some of the residential properties along Hoffman Ave, north of the Property.

In 2018 EPA conducted a targeted removal of soil with elevated PCB concentrations on the western portion of Lot 2 and disposed the soils off-site.

Investigations in 2019 and 2020, conducted on behalf of the City of Lawrence, delineated additional areas for remediation on Lot 1 and Lot 2.

1.3.5 Contaminant Distribution

1.3.5.1 Soil

Soil contamination is generally limited to the upper three to four feet of fill with contaminant concentrations decreasing with depth, although there are some locations where contamination is present to depths of 5 to 7 feet. Contaminant concentrations in soil are significantly higher on Lot 2, where industrial operations took place, than on Lot 1, which is partially paved. PCBs have not been detected at greater than 1 ppm in soil on the northwestern portion of Lot 1. PCBs have been detected at various depths in the soil berm along the eastern and southern Property boundary, indicating that contamination is present throughout the berm. The contaminated berm extends onto the MassDOT easement east of the Property.

PCBs, PAHs, and metals at concentrations exceeding RCS-1 were detected in soil on the residential properties to the north; however, removal actions were conducted on these properties in 2011.

1.3.5.2 Groundwater

Some VOCs, metals, and PAHs have been detected in shallow groundwater. The depth to groundwater is 5 to 12 feet. Petroleum-related and chlorinated VOCs were detected at concentrations below MCP Method 1 GW-2 standards in groundwater samples collected from wells near the center of the Property in the area of the furnace building, baler press area, and large shear, as well as in a monitoring well at the southeastern corner of the Property. VOCs were not detected above the laboratory reporting limit in the two most upgradient wells.

Metals were detected in groundwater samples collected from all the monitoring wells, but at generally low levels (well below the Method 1 GW-3 Standard), except for lead detected in several samples at concentrations above the Method 1 GW-3 Standard. Elevated lead concentrations were attributed to elevated turbidity in the groundwater samples.

1.3.6 Receptors and Potential Exposure Pathways

Potential exposure pathways include:

- Ingestion of and dermal contact with soil and inhalation of soil derived fugitive dust by future construction workers, commercial workers, residents and the general public if the Site is redeveloped. Under current conditions the Site is fenced limiting the potential for soil exposure, although utility workers and trespassers are potential receptors.
- Dermal contact with groundwater by a future construction worker.
- Inhalation of air in an excavation by a future construction worker.

Except for potential dermal contact with groundwater during excavation activities, current and potential future human receptors at the Property do not have direct contact with groundwater. Depth to groundwater ranges from about 5 to 12 feet. Site groundwater is not pumped or used for any purpose. Properties within the Site are serviced by municipal water supply.

1.3.6.1 Ecological Exposure Potential

The Property is currently a vacant, industrial lot with historic structures, concrete pads, and paved areas present throughout the Property. The Property is surrounded by residential and commercial land use with no nearby areas of open land. There are no species of concern, threatened species, or endangered species at the Property. The Property contains no surface water bodies or wetlands. There are no known environmental receptors at the Site. The Merrimack River is approximately 450 feet to the east.

1.4 Revised Tier Classification

The Site was classified as a Tier IC Site in May 2001. Amendments made to the MCP effective June 20, 2014, changed the Tier Classification process and the Numerical Ranking System (NRS) has been eliminated. The following Tier I Criteria (310 CMR 40.0520[2]) now determine the Tier Classification for the Site:

- a) whether there is evidence of groundwater contamination with oil and/or hazardous material at concentrations equal to or exceeding the applicable RCGW-1 Reportable Concentration set forth in 310 CMR 40.0360, and such groundwater is located within an Interim Wellhead Protection Area, Zone II, or within 500 feet of a Private Water Supply Well;
- b) whether an Imminent Hazard is present;
- c) whether one or more remedial actions are required as part of an Immediate Response Action pursuant to 310 CMR 40.0414(2); or
- d) whether one or more response actions are required as part of an Immediate Response Action to eliminate or mitigate a Critical Exposure Pathway pursuant to 310 CMR 40.0414(3).

The Site is not located in a GW-1 Area. There are no open IRAs associated with the Site. The installation of a fence around the Property has mitigated the IH condition posed by the presence of greater than 10 ppm PCBs in surface soil. Therefore, there are no IHs at the Site. Pursuant to 310 CMR 40.0530, the Site can now be classified as Tier II.

The City is filing the Revised Tier Classification as a Municipality with Exempt Status. With this filing, the City is requesting that the response action deadlines be re-established and calculated from the effective date of this Revised Tier Classification. An Eligible Person, Eligible Tenant or Other Person Certification Transmittal Form (BWSC107D) is in Appendix A.

2. Site Location and Surrounding Land Use

2.1 Site Location and Description

The Site is in Lawrence, Massachusetts (Fig. 1) and includes the 207 Marston Street property (the Property); a portion of the Massachusetts Department of Transportation (MassDOT) I-495 easement east of the Property; and a portion of residential properties that abut the Property to the north (Fig. 2).

The Property is approximately 14-acres and has been sub-divided into two lots, Lot 1 and Lot 2 (Fig. 2). Lot 1 is a 2.6-acre parcel to the west and Lot 2 is an 11.4-acre parcel to the east. The portion of the MassDOT easement within the Site is approximately 0.4 acres. Approximately 0.4 acres of four residential properties north of the Property are part of the Site.

The Property is developed with structures formerly associated with the historical use as a metals recycling facility, including a metal shop/garage and furnace building. A former residential structure is also located on the Property. The concrete foundations of other structures, including a baler/press area, small shear, and large shear building are present. Other Property features include a 10 to 20-foot-high soil berm located along the eastern and southern Property boundaries and soil and debris piles. The berm at the eastern Property boundary extends onto the I-495 easement. The soil berms were reportedly constructed by pushing shallow soil from the Property toward the southern and eastern boundaries.

The Property is vacant and is surrounded with a gated and locked chain link fence to restrict access. A portion of the Property, primarily Lot 1, is paved. The remainder of the Property without structures or concrete foundations, is covered with overgrown native vegetation.

2.2 Site Utilities

A Utility Release Abatement Measure (URAM) was performed by the City of Lawrence in October 2017 to inspect the subsurface stormwater and sewer lines on the Property. Based on information available from the URAM documents submitted under RTN 3-34547, the following subsurface utilities are located on the Property:

- A 24 to 48-inch concrete gravity storm drain.
- A 12 to 15-inch clay sewer gravity pipe.
- A water main from Marston Street to the metal shop/garage.

A plan in the 1998 ESA Report shows gas, water, telephone and drain lines.

Copies of plans provided in the URAM and ESA reports are in Appendix C.

2.3 Surrounding Land Use

Residential properties abut the Property to the north, along Hoffman Avenue. An apartment complex is northwest of the Property across Marston Street. West of the Property and across Marston Street is the Partham Elementary School. Commercial properties, including a cargo and freight company and an auto dealership abut the Property to the south. The Property is bounded to the east by Route 495. The Merrimack River is east of Route 495.

2.4 Natural Resource Areas

Based on our review of the MassGIS Phase I Site Assessment Map showing the Property and surrounding area (Fig. 3) the environmental setting and potential sensitive receptors at the Property and in its vicinity include:

- Residential Population: The Site is within a mixed-use area of Lawrence. The residential population within a ½-mile radius of the Site is estimated to be greater than 1,000. The northern portion of the Site includes portions of four residential properties.
- On-site Workers: There are no current workers at the Property.
- Institutions: There are no Institutions within 500 feet of the Site.
- Drinking Water Supplies: A portion of the Site is within a Medium Yield Non-Potential Drinking Water Source Area. There are no known Zone II areas, Interim Wellhead Protection Areas, Zone A areas, Potentially Productive Aquifers (PPA), private wells or Sole Source Aquifers within 500 feet of the Site.
- Surface Waters and Wetlands: The Merrimack River is approximately 450 feet east of the Site.
- Fish Habitat: The nearest fish habitat is the Merrimack River, located approximately 450 feet east of the Site.
- Area of Critical Environmental Concern (ACEC): The Site is not located in an ACEC.
- Threatened or Endangered Species: There are no Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife or Priority Habitats of Rare Species within 500 feet of the Site.
- Protected Open Space: Lorenz Park, a Protected Open Space, is about 380 feet southwest of the Site.

3. Site History

The Site history is based on information provided in the 1998 ESA, 2004 Phase II CSA, and by the City of Lawrence regarding its ownership of the Property.

The Property is owned by the City of Lawrence, which acquired the Property in May 2016 through foreclosure of tax title. Since 2001, the Property has been vacant, except for a truck driving school, which operated for a short time in 2006.

A metals recycling facility (John C. Tombarello & Sons followed by American Recycling of Massachusetts, Inc.), operated at the Property from about 1941 through 2001. Structures associated with the metals recycling operations included a scale house, metals shop/garage, furnace building, baler/press building, small shear and large shear buildings, most of which are located on Lot 2. A mobile car crusher also operated on the Property. The residential structure on Lot 1 was the home of a member of the Tombarello family. Locations of these structures are shown in Fig. 4.

During its operation as a metals recycling facility, three 275-gallon aboveground fuel oil tanks were used for heating the baler and shears buildings, and a 500-gallon aboveground waste oil tank was located near the furnace building. Drums of petroleum products were stored onsite. A gasoline underground storage tank (UST) and diesel UST were reportedly removed in the 1980's and 1996, respectively.

Prior to development as a metals recycling facility, the northern portion of the Property was farmland. According to the 1998 ESA, the southern portion of the Property was used as a municipal landfill, but this has not been confirmed based on a search of closed landfills in Lawrence. Prior to 1935, a portion of the Property was owned by a soap manufacturer.

4. Previous Investigations and Response Actions

The following is a summary of investigations and response actions that have been conducted by others prior to 2019. A summary of investigations conducted by the City of Lawrence in 2019 and 2020 is in Section 5.

Soil investigation locations are shown in Fig. 5 and monitoring well locations are in Fig. 6. A summary of monitoring wells installed is in Table 1 and monitoring well gauging data is in Table 2.

4.1 Heat Transfer Oil Release – RTN 3-16817 (NEDT, 1998)

On May 19, 1998, approximately 20 to 30 gallons of heat transfer oil was released to soils at the Site from a scrap heat exchanger that was being delivered to the Site by Sprague Energy. The release occurred on the southeastern portion of the Site, about 40 feet from the southern berm and 60 feet from the eastern berm. The approximate location of the release is shown in Fig. 4.

New England Disposal Technologies, Inc. (NEDT) conducted response actions on behalf of Sprague Energy, which took responsibility for the release. The affected area was excavated to depths ranging from about 12 to 32 inches and a total of about 38 tons of soil was excavated. In addition to the excavation bottom and sidewall samples, a heat transfer oil sample and two soil samples collected from outside the release area were submitted for laboratory testing.

Based on the results of excavation bottom and sidewall sampling, and a comparison to both the heat transfer oil and background soil sample results, NEDT concluded that cleanup activities achieved background levels and submitted a Class A-1 Response Action Outcome (RAO) Statement in July 1998.

NEDT collected soil samples to characterize the excavated soil for off-site disposal, the samples identified concentrations of tetrachloroethene, cadmium, lead, TPH, and PCBs that exceeded the applicable MassDEP reportable concentrations. NEDT concluded that the presence of the above compounds was attributable to pre-existing conditions and not from the heat transfer oil release. NEDT informed representatives of Tombarello & Sons (the Property owner) of the requirement to notify MassDEP of the release.

Copies of the soil data summary tables provided in the RAO report are in Appendix D. Soil laboratory data reports were submitted to MassDEP with the RAO report.

4.2 Environmental Site Assessment – (WZB, 1998)

In 1998 W.Z. Baumgartner and Associates, Inc. (WZB) conducted an ASTM Environmental Site Assessment (ESA) of the Site on behalf of American Recycling, Inc., a potential purchaser of the Property. At the time the ESA was conducted, the Property was owned and operated by John C. Tombarello & Sons, Inc. as a metals recycling facility.

The assessment included a subsurface investigation conducted in July 1998 including advancing six soil borings and collecting soil samples (SB-1 through SB-6); installing five groundwater monitoring wells and collecting groundwater samples (MW-1, MW-2/2A, MW-3/3A, MW-4); and collecting three surface soil samples (SS-7, SS-8, and SS-9). Soil sample locations are in Fig. 5 and monitoring well locations are in Fig. 6.

The subsurface soil samples were tested for SVOC, VOC, PCB, and RCRA 8 metals analysis. The surface soil samples were tested for TPH-Gasoline Range, TPH-Diesel Range, PCBs, and RCRA 8 metals. The groundwater samples were tested for SVOCs, VOCs, pesticides, PCBs, total and dissolved RCRA 8 metals, cyanide, and phenolics. Summary tables of the data included in the ESA report are in Appendix D. Laboratory data reports were not included in the ESA and are not available.

Some PAHs (a subset of SVOCs), TPH, PCBs, and lead were detected in some of the soil samples at concentrations greater than the applicable MCP Reportable Concentrations.

Total metals concentrations in some groundwater samples exceeded MCP Reportable Concentrations. However, this was attributed to elevated turbidity in the samples. Dissolved metals concentrations were below the MCP Reportable Concentrations. Some petroleum-related and chlorinated VOCs were detected in the groundwater samples collected from MW-2/2A and MW-3 (northwest and southeast, respectively, of the small shear) at concentrations below the applicable MCP Reportable Concentrations. No other contaminants were detected at concentrations above the laboratory reporting limits in the samples.

4.3 Immediate Response Action – RTN 3-18126 (HEA, 1999)

On March 31, 1999 following its review of the 1998 ESA prepared by WZB, MassDEP issued a Notice of Responsibility (NOR) to both Tombarello Recycling and American Recycling requiring them to take necessary response actions to address the PCBs in surface soil at concentrations indicating a potential Imminent Hazard (IH), and other contaminants in soil and groundwater at concentrations above applicable MCP Reportable Concentrations. Required response actions specified by MassDEP included:

- Submitting an IRA Plan to conduct an IH Evaluation and to remove stockpiled soils from the Site.

- Additional Comprehensive Response Actions as required under the MCP to address contaminant conditions.

In 1999, Higgins Environmental Associates, Inc. (HEA) conducted an IRA on behalf of American Recycling. The IRA included removing a soil stockpile contaminated with heat transfer oil; collecting surface soil samples; installing three monitoring wells (SB5/MW-5, SB6/MW-6, and SB7/MW-7)(Fig. 5); and collecting groundwater samples from both newly installed monitoring wells and one existing (MW-1) monitoring well that had been installed by WZB. In addition, a barbed-wire fence was installed around the perimeter of the Property to control access and address the IH condition. The boring/monitoring well logs for SB5/MW-5 through SB7/MW-7 were included in the July 1999 IRA Status Report prepared by HEA and submitted to MassDEP.

Between April and June 1999. Twenty four surface soil samples were collected for laboratory analysis (SB5 NORTH, SB5 SOUTH, SB5 WEST, SB5 EAST, F2, SS8, SS8 NORTH, SS8 SOUTH, SS8 EAST, SS8 WEST, SS7, SS7 NORTH, SS7 SOUTH, SS7 EAST, SS7 WEST, F7, SB2 SS1, SB6 SS1, ALL, SB6-N1, SB6-S1, SB6-E1, SB6-W1 and SB6-SS2). The samples were submitted to ChemServe Environmental Analysts of Milford, New Hampshire for chemical testing. All samples were tested for PCBs, lead, and cadmium, and select samples were additionally tested for EPH, VOCs, and VPH. Sample locations are in Fig. 5.

PCBs, lead, TPH, several PAHs, the VOCs methyl tertiary butylether (MTBE) and tetrachloroethane, and petroleum hydrocarbon fractions were detected in some of the soil samples at concentrations above the applicable Reportable Concentrations.

Groundwater samples were collected from MW-1, MW-5, MW-6, and MW-7 and submitted to ChemServe for chemical testing. The samples were tested for VOCs and the metals arsenic, total chromium, and lead. The samples from MW-1 and MW-5 were also tested for VPH and EPH. Chromium and the VOCs trichloroethene, methyl tert butyl ether (MTBE), and/or chloroethene were detected in the samples from MW-6 and MW-7, but at concentrations below the applicable Reportable Concentrations.

Summary tables of soil and groundwater sample analyses results prepared by HEA are in Appendix D. Laboratory data reports were previously submitted to MassDEP in the IRA Completion report.

As part of the IRA, in May 1999, about 100 tons of stockpiled soil that had been generated during the heat transfer oil release under RTN 3-16817 was transported offsite under a MassDEP Bill of Lading (BOL). The soil had been characterized for disposal by WZB and the data provided to HEA. Copies of the disposal characterization data and the BOL were included in an IRA Status Report prepared by HEA dated July 1999.

HEA submitted an IRA Status Report dated July 28, 1999 documenting the above IRA activities, but never submitted an IRA Completion Report. In response to an Administrative Consent Order and Notice of Noncompliance (ACOP-NE-00-9013-123) issued by MassDEP dated February 14, 2001, Haley & Aldrich submitted an IRA Completion Report in May 2001 on behalf of American Recycling, documenting the work conducted by HEA.

4.4 Immediate Response Action – RTN 3-18431 (HEA, 1999)

On June 21, 1999, during a compliance inspection of the Site conducted by MassDEP, an oily sludge was identified on the floor of the baler/press room, in which an open floor drain was located. MassDEP identified the condition as a Threat of Release and assigned RTN 3-18431.

HEA performed an IRA to address the conditions identified by MassDEP, including cleanup of the oily sludge; removal of 55-gallon drums in the baler/press room; replacement of a seal on one of the cylinders that had been leaking hydraulic oil onto the floor; and abandonment of the floor drain by filling it with concrete to prevent further discharge of oil into the sanitary sewer system. HEA filed a Class A-1 RAO in August 1999. However, the RAO was retracted in May 2001, and RTN 3-18431 was linked to RTN 3-18126, in response to the February 2001 ACO and NON issued by MassDEP.

No soil or groundwater samples were collected in association with this release.

4.5 Soil and Sediment Sampling Investigations RTN 3-18126 (H&A, 2001-2002)

As reported by Weston Solutions in its 2004 Phase II CSA, in September 2001, H&A collected 35 soil samples from the area of the former baler press building and from the soil berm located along the southern and eastern Site boundaries at depths ranging between 0 and 15 feet below ground surface. Boring logs were not available. The samples (B4, D5, E4, F2, F4, G3, G4, H2, H3, H6, I3, I4, J1, J5, L5, M2, M3, M4, BLR-TP1 H3, BLR-TP2 G3, SCC-1, SM2-3, BRM-TP1 G6, BRM-TP3 J6, BRM-TP4 J6, BRM-TP5 K6, BRM-TP6 L5, BRM-TP6 L5, BRM-TP7 L5, BRM-TP8 L3, BRM-TP9/9A M2 and BRM-TP10 M1) were tested for PCBs. Soil boring sample locations are shown in Fig. 5 and soil berm sample locations are in Fig. 7. PCB concentrations in the samples ranged from about 0.5 ppm to 62 ppm.

Weston also reported that in September 2002, H&A collected nine sediment samples (SED-1 through SED-9) from the Merrimack River for PCBs analysis. Information on the locations of the sediment samples was not available. Based on the data reported by Weston, PCBs were detected in two of the nine sediment samples at concentrations ranging from 0.49 to 2.1 ppm.

Summary tables of the soil and sediment data collected by H&A as reported by Weston are in Appendix D. The Weston report did not include laboratory data reports for either the soil or sediment data.

4.6 Phase II Comprehensive Site Assessment RTN 3-18126 (Weston, 2003)

Between February and September 2003 Weston Solutions, Inc. conducted a Phase II CSA to further delineate the extent of contamination at the Site. The Phase II CSA included the sampling and analysis of surface and subsurface soil, groundwater, and sediment samples from the Merrimack River. Soil sample locations are shown in Fig. 5 and monitoring wells are in Fig. 6.

February 2003 Investigations

Weston advanced 13 soil borings (WSB-1 through WSB-12 and WSB-14) to a depth of 7 feet. Boring logs were not available. Twenty-eight (28) samples were collected from various depths throughout each boring and submitted to ESS Laboratory in Cranston, Rhode Island for laboratory analysis of EPH fractions, RCRA 8 metals, and PCBs. PCB analysis was by Method 8082 but the extraction method was not specified. EPHs, metals (except for selenium and silver), and PCBs were detected at concentrations greater than the applicable Reportable Concentrations in most of the samples tested. Soil sample results are summarized in Table 3. Laboratory data reports were submitted to MassDEP in the Phase II CSA report.

Four of the soil borings were completed as microwells (MW-1, MW-5, MW-6, and MW-7) to a depth of 16 feet. Monitoring well logs were not available. Groundwater samples were collected from the wells and submitted to ESS Laboratory for testing for VOCs and dissolved RCRA 8 metals. Both petroleum-related and chlorinated VOCs were detected in the samples collected from MW-6 and MW-7. However, only vinyl chloride was detected in MW-7, the downgradient monitoring well, at a concentration above the applicable Reportable Concentration and the Method 1 GW-2 Standard, but below the Method 1 GW-3 Standard. Groundwater sample results as presented by Weston in its Phase II CSA are in Appendix D. Laboratory data reports were submitted to MassDEP in the Phase II CSA report.

Weston collected two sediment samples from the Merrimack River (RSED-1 and OUTFALL-1) and one soil sample from a Property catch basin (CB1). The sediment sample RSED-1 was collected from the Merrimack River upstream of the Site and the sediment sample OUTFALL-1 was collected from the Merrimack River downstream of the Site. The samples were submitted to ESS Laboratories for PCB, metals, and EPH fraction analysis. PCB analysis was by Method 8082 but the extraction method was not specified. PCBs were detected in the Site catch basin sample at 1.64 ppm. PCBs were detected in the upstream sediment sample (RSED-1) at 0.07 ppm and in the downstream sediment sample

(OUTFALL-1) at 3.48 ppm. Metals and EPH fractions were detected in all three samples. Sediment and catch basin soil sample results as presented by Weston in its Phase II CSA are in Appendix D. Laboratory data reports were submitted to MassDEP in the Phase II CSA report.

July 2003 Investigations

In July 2003, Weston observed the advancement of 44 soil borings to a depth of 4 feet, laid out across the Site on a 100-foot by 100-foot grid (AB-12 through LM-34). Boring logs were not available. Soil samples were collected from each boring at depth intervals of 0 to 0.5 feet and 1 to 3 feet. Samples from two adjacent grid locations and the same depth interval were composited into one sample and submitted to Resource Laboratory, Inc. of Portsmouth, New Hampshire for PCB testing by Method 8082 with extraction by Method 3540 (manual Soxhlet) (3540/8082). A total of 22 composite samples were collected from a depth of 0 to 0.5 feet and 22 composite samples were collected from a depth of 1 to 3 feet. The results of PCB testing are in Table 3.

In addition, Weston collected 33 discrete soil samples for PCB testing from 11 locations (WSB-16 through WSB-18, WSB-21, WSB-22, WSB-25 through WSB-27, WSB-30 through WSB-32) in the area of two previously sampled locations where PCB concentrations were greater than 50 mg/kg (WSB-6 [Weston, February 2003] and SB-6 SS1 [HEA, June 1999]). Samples were collected from three depth intervals (0 to 1 ft, 1 to 2 ft, and 2 to 3 ft) at each location. Soil samples were submitted to Resource Laboratory for PCB testing.

Soil testing results are summarized in Table 3. Soil laboratory data reports were submitted to MassDEP with the Phase II CSA.

September 2003 Investigations

In September 2003, Weston collected an additional 44 soil samples from 14 soil boring locations (location IDs ranging from WSB-35 through WSB-80) at sample depths of 0 to 1 ft, 1 to 2 ft, 2 to 3 ft, and at some locations from 3 to 4 ft. Boring logs were not available. The sample locations were selected from five composite locations where elevated PCB concentrations were detected in the July 2003 samples. The samples were submitted to Resource Laboratory for extraction and PCB testing by Methods 3540/8082.

Soil testing results are summarized in Table 3. Soil laboratory data reports were submitted to MassDEP with the Phase II CSA.

4.7 Supplemental PCB Characterization, RTN 3-18126 (Weston, 2005)

In October 2004, Weston submitted the Phase II CSA to EPA as part of an application to conduct a PCB cleanup under the TSCA regulations. In response to its review of the Phase II CSA and a Site visit conducted by EPA, EPA identified potential PCB soil data gaps as well as PCB data gaps associated with building materials and scrap metal piles. In May 2005 Weston collected additional PCB data to address EPA's concerns. The results of building materials characterization are included in a letter prepared by Weston to EPA dated June 8, 2005 Re: Supplemental PCB Characterization Results, Former Tombarello & Sons Property and is not discussed in this report.

On May 2, 2005, two soil borings (WSB-81 and WSB-82) were advanced along the property boundary near Hoffman Avenue. Weston collected three soil samples from each boring at depths of 0-6 in, 1-2 ft, and 2-3 ft for PCB testing. The concentrations of PCBs in the samples ranged from about 0.7 ppm to about 7 ppm.

Soil testing results are summarized in Table 3. The letter report prepared by Weston documenting the investigation did not include a figure showing the sample locations, boring logs, or laboratory data reports.

4.8 Immediate Response Action RTN 3-18126 (Weston, 2007)

In February 2007, Weston conducted an IRA consisting of the sampling and analysis of surface soils along the fence line between the Property and the residential properties on Hoffman Avenue. The samples were collected on the former Tombarello property behind the following residential properties: 19, 21, 25, 27/28, 31, 33, 41, 51 and 53 Hoffman Avenue. The purpose of the IRA was to address MassDEP concerns that PCBs and metals in dust from the Site could have been generated from Site activities and deposited on the adjacent residential properties at concentrations representing an IH.

On February 19, 2007, Weston collected 17 composite soil samples from locations approximately 50 feet apart along a 700-foot length at the northern property boundary. Sample locations are shown in a figure prepared by Weston in Appendix D. The samples were collected from a depth of 0 to 6 inches and submitted to ESS Laboratory for PCB and RCRA-8 metals testing. Samples for PCB analysis were extracted by Method 3541 (Automated Soxhlet) and analyzed by Method 8082 (3541/8082).

The data was not tabulated by Weston. PCB concentrations in the soil samples ranged from about 0.1 to 6.3 ppm, below the IH criteria of 10 ppm. Metals concentrations in the samples were also below the applicable IH criteria. Laboratory data reports were submitted to

MassDEP in the IRA Completion Report. Based on the results of the sampling, Weston submitted an IRA Completion Report in April 2007.

4.9 Surficial Soil Sampling at Adjacent Residential Properties (Shaw, 2007) and Removal Action (Weston, 2011)

From October 2 to October 5, 2007, Shaw Environmental, Inc. under contract to the EPA, collected 131 surface soil samples from nine of the adjacent residential properties along Hoffman Avenue (19, 21, 25, 27/29, 31, 33, 41, 51 and 53 Hoffman Avenue). The purpose of the sampling was to evaluate the extent of previously detected PCBs and metals in surface soil samples collected along the fence line between the Site and the residential properties in 2007 by Weston. Each sample was tested for PCBs and RCRA-8 metals.

MassDEP summarized the results of the sampling in letters to the residents dated July 29, 2010. Copies of the summary data tables attached to the letters and figures showing sample locations are in Appendix D. Laboratory data reports were not included.

Except for the average PCB concentrations in soil at 41 and 51 Hoffmann Avenue, the average PCB concentration in soil at each property was below the MCP Method 1 S1 standard of 2 ppm. The average PCB concentration in soil at 41 Hoffmann Avenue was 2.1 ppm and the average PCB concentration in soil at 51 Hoffman Avenue was 3.3 ppm.

In addition, the average concentrations of the following metals in soil were above the MCP Method 1 S1 standards: chromium on 19 Hoffman Avenue; cadmium and lead on 41 Hoffman Avenue, and cadmium on 53 Hoffman Avenue.

In May and June 2011, Weston, EPA's START Team, conducted removal actions at residential properties at 33, 41, 51, and 53 Hoffman Avenue. Soil was excavated to varying depths and horizontal extents on each property and soil verification samples were collected and tested for PCBs and metals. Copies of the Removal Program After Action Reports for each property with soil verification results are in Appendix D.

4.10 EPA Removal Program Preliminary Assessment/Site Investigation (PA/SI), EPA and START (2010)

In response to a request from MassDEP, EPA and its START consultant (Weston) conducted an investigation to evaluate the extent of Site contamination. The investigation was conducted from October 12 through October 21 and was the collection of a total of 159 composite surface soil samples (including eight duplicate samples) and 38 soil pile samples (including two field duplicates) at the Property.

Surface soil samples (A-09 through Z-09) were collected from a 50-foot by 50-foot grid across the Property and consisted of one composite sample made up of four grab samples collected within each grid area. The surface soil samples were collected from a depth of 0 to 0.25 ft. Samples were not collected from sampling grids where less than 50 percent of the ground surface was accessible due to pavement or building foundations. Soil pile samples (example sample nomenclature: K-08-01) were grab samples. Figures prepared by Weston illustrating the sampling grid used for surface soil and soil pile samples are in Appendix D. Surface soil sample locations are represented in Fig. 5 as the center of the sample grid. Soil pile sample locations are in Fig.7.

The samples were submitted to the EPA Office of Environmental Measurement and Evaluation (OEME) laboratory located in North Chelmsford, Massachusetts for PAH, PCB, and metals analyses. Soil testing results are summarized in Table 4. Laboratory data reports were submitted to MassDEP in the PA/SI report.

Detected PCB concentrations ranged from less than 1 ppm to a maximum of 75 ppm. Detected lead concentrations ranged from 160 ppm to 4,400 ppm. The metals arsenic, cadmium, and chromium were also detected in some of the samples. PAHs were detected throughout all samples.

4.11 Removal Action and Soil Consolidation Area, First Lawrence Financial (2011)

Between April 28 and May 27, 2011, First Lawrence Financial, LLC (FLF) conducted a removal action in accordance with the requirements of an “Administrative Settlement Agreement and Order on Consent for Removal Actions (AOC)” issued by EPA. The work was summarized in a report “Removal Actions – AOC Summary Report” dated August 23, 2011 prepared by Tighe & Bond. The work was conducted by Charter Environmental, Inc. and was:

- Preparation of a soil consolidation area on the southern portion of the Property (Fig. 4) by excavating a 15 ft by 36 ft area to a depth of 6-inches. The excavated soil (about 10 cubic yards) was petroleum stained. The petroleum stained soil was stockpiled for later disposition; and loamed and seeded for stabilization.
- Removal of a 65 ft by 20 ft by 1 ft reinforced concrete slab from the planned soil consolidation area. The removed slab was stockpiled on the Property.
- Excavation of a 600 ft by 50-foot area of PCB-impacted soil to a depth of one foot along the fence line of the property boundary with the abutting residential properties to the north (about 1,100 cubic yards). At the completion of the excavation, Tighe & Bond collected 15 composite soil samples (PX 1-15) from the bottom of the excavation. The samples were submitted to Alpha Analytical of Westborough, MA

for PCB (Methods 3540/8082) and RCRA 8 metals analysis. PCB concentrations in the excavation bottom samples ranged from 0.23 ppm to 14.8 ppm. Lead concentrations ranged from 14 to 3,500 ppm. Results are summarized in a table prepared by Tighe & Bond and a figure showing approximate sample locations in Appendix D. Following confirmatory sampling, the excavation was lined with filter fabric and backfilled with fill from an offsite source.

- Excavated soil was placed in a 150 ft by 150 ft soil consolidation area on the southern portion of Lot 2. Prior to placing the soil in the soil consolidation area, it was lined with filter fabric.

The approximate excavation and soil consolidation areas are shown in Fig. 2.

4.12 Targeted Brownfields Assessment (Nobis, 2016)

In June 2016, Nobis conducted a Targeted Brownfields Assessment (TBA) on behalf of the EPA as a grant of service provided to the City of Lawrence under the EPA's TBA program. The purpose of the investigation was to support development of potential remedial alternatives.

The TBA field investigation was:

- Advancement of 76 soil borings across the Site (sample names varied and included the following designations: BPA, CD, FB, FG, LS, MS, NPA, P, SA, SB, SBB, SS, and SVA to depths ranging from 3 to 13 feet. Boring locations are in Fig. 5.
- Completion of nine of the soil borings as monitoring wells (MW-8 through MW-16) installed to a maximum depth of 13 feet (Fig. 6).
- Advancement of 12 hand augers (HA-01 through HA-12) to a depth of 1 foot into the soil berm along the eastern and southern property boundary. Hand auger locations in the berm are in Fig. 7.
- Excavation of 10 test pits (TP-01 through TP-10) into the soil berms along the southeastern and eastern Property boundaries and 10 test pits (TP-11 through TP-20) into soil stockpiles. Soil berm and soil pile locations are shown in Fig. 7.
- Collection of soil and groundwater samples.

Boring and monitoring well logs were included in the TBA Report, which was submitted to MassDEP.

Soil samples were submitted to Eurofins/Spectrum Analytical of North Kingstown, Rhode Island for analysis for PCBs, RCRA 8 metals plus hexavalent chromium, cyanide and physiologically available cyanide (PACN), VOCs, EPH and PAHs.

Groundwater samples were submitted to Eurofins/Spectrum Analytical of North Kingstown, Rhode Island for analysis for PCBs (Methods 3540/8082), total RCRA 8 metals, cyanide and physiologically available cyanide (PACN), VOCs, EPH plus target analytes, and PAHs.

Results of soil testing are summarized in Table 5. Results of groundwater testing conducted by Nobis are in Table 6. A summary table prepared by Nobis that includes its groundwater sample data along with historic groundwater data is in Appendix D. Laboratory data reports were submitted to MassDEP appended to the TBA report.

4.13 Removal Action, EPA (2018)

In December 2018, EPA conducted a removal action to address an area of significantly elevated concentrations of PCBs and lead in Site soil. The approximate removal area is shown in Fig. 4. Soil was excavated to a depth of three feet across the removal area. Prior to offsite disposal, the soil was treated to remove the RCRA hazardous waste characteristic associated with lead toxicity. A total of 657.65 tons of treated soil was transported to Heritage Environmental Services, LLC in Rochdale, Indiana for disposal.

Soil verification samples were collected from the sidewalls (EW-01 through EW-07, NW-01, NW-02, WW-01 through WW-07, NHW-01, EHW-01, SHW-01, and WHW-01) and base (FS-01 through FS-20 and HF-01) of the excavation areas. Sidewall samples were collected from the mid-point of the sidewalls, or at a depth of about 1½ feet. Sample locations are in Fig. 5.

Samples were submitted to Chemtech Consulting Group for PCB testing. Sample results are summarized in Table 7. Laboratory data reports may not have previously been submitted to MassDEP, and are included in Appendix E. Detected PCB concentrations in the excavation bottom samples were less than 10 ppm. Detected PCB concentrations in the sidewall samples ranged from less than 1 ppm to 111 ppm.

5. Supplemental Phase II Investigations

Supplemental investigations were conducted on behalf of the City of Lawrence in 2019 and 2020 to fill data gaps for risk characterization; more fully characterize the extent of contamination in the soil berms and soil piles; delineate areas where PCBs had previously been identified at greater than 50 ppm; characterize concrete pads and asphalt; and to characterize soil for offsite disposal.

5.1 Lot 1 Investigations, Credere Associates (2019-2020)

In September and December 2019 and January 2020, Credere, on behalf of the City of Lawrence under a grant from the Merrimack Valley Planning Commission (MVPC), conducted investigations on Lot 1. The primary objective of the investigations was to more fully characterize soil contamination at depth on Lot 1 because data previously collected was primarily shallow data (0 to 3-inches) and limited data had been collected on the northwest portion of Lot 1.

5.1.1 September 2019 Investigations

5.1.1.1 Soil Sampling

The September 2019 investigations included the collection of asphalt and soil samples across Lot 1. Four soil borings (SB-1 through SB-4) were advanced on the northwest portion of Lot 1 and 24 soil borings (A-05R through E-08R) were advanced on the larger unpaved portion in the area of surface soil samples collected by EPA in 2010. Soil borings were advanced by a direct push drilling method (Geoprobe) to a depth of 10 feet. Boring locations are shown in Fig. 5 and boring logs are in Appendix F.

Soil samples from SB-1 through SB-4 were collected from depth intervals of 0 to 0.5 feet below the bottom of the asphalt surface, 1 to 2 ft, 3 to 5 ft, and 5 to 7 feet. All the soil samples from these borings, except for the samples collected from the 5 to 7 ft depth interval, were tested for PCBs (Methods 3540/8082). The 1 to 2 ft, 2 to 3 ft, and 5 to 7 ft samples were also tested for EPHs, VOCs, and RCRA 8 metals plus zinc.

Soil samples were collected from borings A-05R through E-08R at depth intervals of 1 to 2 feet, 2 to 3 feet, 3 to 5 feet and 5 to 7 feet. Samples from select locations were also collected from the 1 to 3 feet and 7 to 9-foot depth intervals. Samples from select locations collected from the 1 to 2 foot and 2 to 3-foot depth intervals were tested for PCBs (Methods 3540/8082). Samples from select locations and various depth intervals were tested for EPHs

(with target PAHs), RCRA 8 metals, zinc, hexavalent chromium, and VOCs. Samples were submitted to Alpha Analytical of Westborough, Massachusetts for chemical testing.

Results of chemical testing are summarized in Table 8 and laboratory data reports are in Appendix E. Total detected PCB concentrations ranged from less than 1 ppm to 17.3 ppm. Lead ranged from about 2 ppm to 2,650 ppm. EPH and PAHs were generally present throughout but the EPH fraction C₁₉ through C₃₆ aliphatics was detected at a concentration above the MCP Upper Concentration Limit (UCL) in a sample collected from SB-2 at a depth of 5 to 7 feet.

5.1.1.2 Asphalt Sampling

Four asphalt samples (AS-1 through AS-4) were collected at the same locations as the soil borings on the northwest portion of Lot 1 (SB-1 through SB-4) and four asphalt samples (AS-5 through AS-8) were collected from other paved areas on Lot 1 (Fig. 8). Asphalt samples were collected using an impact hammer drill from a depth of 0 to 0.5-inch.

Asphalt samples were submitted to Alpha for PCB testing (Methods 3540/8082). Results of asphalt sampling are in Table 9 and laboratory data reports are in Appendix E along with Credere's soil data. PCBs ranged from less than 1 ppm in most of the samples to 7 ppm.

5.1.2 December 2019 and January 2020 Investigations

5.1.2.1 Soil Sampling

In December 2019, Credere advanced an additional 10 borings, SB-5 through SB-15 on and near the northwest portion of Lot 1 (Fig. 5). Soil boring SB-5 was completed as a monitoring well. Soil boring/monitoring well logs are in Appendix F.

Soil borings SB-5 through SB-10 were advanced to delineate an EPH fraction MCP UCL exceedance detected in a soil sample previously collected from boring SB-2 and to evaluate the extent of lead contamination in soil at depth in that area. Samples were collected from these borings at depths ranging from 6 to 9 feet and were tested for EPH and lead. None of the samples were tested for PCBs.

Borings SB-11 through SB-15 were advanced to delineate a PCB concentration of 7 ppm in soil boring NPA-02 (which was completed as a monitoring well [MW-15]) (collected by Nobis in 2016) at a depth of 2 to 3 feet. Soil boring NPA-02 was originally thought to be located on the northwest portion of Lot 1. Therefore, samples were collected to delineate PCB concentrations greater than 1 ppm on the northwest portion of Lot 1 for future cleanup. However, based on field observations of the location of soil boring NPA-02 (MW-15), it was confirmed that NPA-02 is located about 15 ft south of the Site. Samples were collected from borings SB-11 through SB-15, locations surrounding NPA-02, at depth intervals of 1 to

1.5 feet, 2 to 3 feet, and 3 to 4 feet and submitted to Alpha for PCB testing (Methods 3540/8082).

Results of soil testing for PCBs are summarized in Table 8 and the lab data report is in Appendix E. Detected PCB concentrations in the samples ranged from 0.156 to 3.02 ppm.

5.1.2.2 Groundwater Sampling

A monitoring well was installed at SB-5 to evaluate if groundwater had been affected by the elevated EPH in soil. On January 10, 2020, Credere collected a groundwater sample from the well using low flow sampling methods and submitted to Alpha for EPH testing. No EPHs or target PAHs were detected in the sample at concentrations above the laboratory reporting limits. Results are summarized in Table 6. The laboratory data report is in Appendix G.

5.2 Lot 2 Investigations, GEI (2019-2020)

GEI conducted investigations on Lot 2 between July and September 2019 and in March 2020. Investigations were conducted on behalf of the City of Lawrence under an EPA Brownfields Assessment Grant for Lot 2. The investigations were conducted in accordance with Site-specific Quality Assurance Project Plan (QAPP) Addendums dated July 2019 and February 2020 prepared by GEI and approved by EPA.

The overall objectives of the investigations were to collect the additional data needed to support a risk characterization and the development of a cleanup plan for Lot 2. The specific objectives of the investigations were to:

- Delineate areas where PCBs in soil (including the soil berm and soil piles) are greater than or equal to 100 ppm.
- Delineate areas where PCBs in at-grade soil are greater than or equal to 50 and less than 100 ppm.
- Evaluate and delineate potential metals hotspots in soil.
- Collect additional chemical data in soil to support an MCP Risk Characterization.
- Characterize concrete slabs for potential onsite reuse under a MassDEP Beneficial Use Determination (BUD).
- Characterize soil to meet disposal facility requirements.

All samples were submitted to ESS Laboratory of Cranston, Rhode Island for laboratory testing. Laboratory data reports for soil delineation samples are in Appendix E. Laboratory data reports for concrete samples are in Appendix H. Laboratory data reports for soil

disposal characterization samples are in Appendix I. Samples for PCB analysis were extracted/analyzed by Methods 3540/8082.

5.2.1 Soil Borings and Soil Sampling

From July 31 to August 7, 2019 we observed Northern Drill Service (NDS) of Northborough, Massachusetts advance 34 soil borings using a Geoprobe direct push drill rig. Most of the borings were advanced to a depth of 7 feet. A summary of the borings advanced and the purpose of each of the borings is in Table 10. Boring logs are in Appendix F.

Most of the borings were advanced to delineate previously detected PCB concentrations greater than 50 ppm. Samples were collected from these borings generally at depth intervals of 0 to 0.5 ft, 1 to 2 ft, 2 to 3 ft, 3 to 5 ft, and 5 to 7 feet for PCB analysis. Analysis of samples from depths greater than 3 feet were held pending the results of the shallower sample. Deeper samples were analyzed where a shallower sample had greater than 50 ppm PCBs.

Samples were collected from some of the borings at depth intervals of 0 to 3 feet and 5 to 7 feet for additional analysis for the purposes of risk characterization. These samples were tested for EPHs with target PAHs, RCRA 8 metals, zinc, and VOCs.

Evidence of petroleum contamination was observed in borings CD-34EN and CD-34EE; therefore, samples were also collected from each of these borings for EPH analysis.

Between September 10 and September 16, 2019, GEI collected soil samples by hand auguring to delineate PCBs greater than 100 ppm that were detected in samples collected in July and August from EW-07S and W-07. Additional samples were also collected in the area of SVA-05 where Nobis had previously detected greater than 100 ppm PCBs.

Soil borings identified in the site-specific QAPP that were not advanced included:

- EW-06S and EW-07N: these locations are duplicate locations and were identified as unnecessary because they are both within an area identified for future excavation.
- SVA-05S: this location was intended to evaluate the extent of PCB contamination greater than 100 ppm south of Nobis' SVA-05 location, which was an at-grade location (i.e., not a soil pile or soil berm location). SVA-05S would have been located within the berm and was therefore not advanced.
- SVA-06N, S, E, and W: these locations were intended to evaluate the potential presence of a chromium hot spot at Nobis' SVA-06 location, which was an at-grade location. Based on provided coordinates for SVA-06, it was located beneath a soil pile. Therefore, we instead advanced a soil boring and collected samples for chromium testing at the toe of the soil pile (SVA-06-GEI).

- FG-34: this location was within about 5 feet of planned boring WW-06N and the purpose of sampling at this location was to collect additional data from a depth greater than 3 feet for risk characterization. Therefore, a sample was collected from WW-06N in lieu of advancing an additional boring at FG-34.

Results of soil sampling are in Table 11 and laboratory data reports are in Appendix E.

5.2.2 Soil Berm Sampling

From July 30 to August 6, 2019 and September 10 to September 16, 2019, soil samples were collected from 97 locations on the soil berm. The investigation locations were placed on the berm along 19 transects aligned perpendicular to the length of the berm (i.e. from toe to toe) and spaced about every 50 feet along the entire length of the berm. Five investigation locations were placed along each transect, as shown in Fig. 7. The nomenclature for samples collected from the top of the berm was TBERM- followed by the transect number (e.g. TBERM-01), from the middle of the berm was MBERM- followed by the transect number and either N, S, E, or W to distinguish the side of the berm based on the cardinal direction (e.g. MBERM-01N); and for locations at the bottom of the berm BBERM- followed by the transect number and either N, S, E, or W to distinguish the side of the berm based on the cardinal direction (e.g. BBERM-01N).

Two additional locations (MBERM-15WN and MBERM-15WS) were advanced north and south of MBERM-15W to delineate a PCB concentration greater than 100 ppm detected at MBERM-15W.

Samples collected from the top of the berm were collected using a hand-held direct push device. Sample depth intervals for these locations were 0 to 1 foot and 3 to 4 feet from the top of the berm. Samples were collected from test pits excavated at the middle and bottom berm locations. Samples from the middle of the berm were collected from the 5 to 6-foot depth interval into the berm from the test pit location and samples from the bottom of the berm were collected from the 0 to 1-foot depth interval into the berm from the test pit location.

During the investigations we noted any visual or olfactory evidence of contamination, and screened soil samples for VOCs using the jar headspace method and a photoionization detector (PID). No visual or olfactory signs of contamination were observed. Elevated PID screening results were noted for samples collected on July 30, 2019 to July 31, 2019. However, these results are not considered accurate and are attributed to equipment malfunction. Boring and test pit logs with details of our physical observations and the results of jar headspace screening are in Appendices D and J, respectively.

All soil samples collected from the berm were tested for PCBs. Samples from five locations (MBERM-03N, MBERM-06N, MBERM-12W, MBERM-15W, MBERM-18W) were also

tested for EPH with target PAHs, and RCRA 8 metals plus zinc. Results of chemical testing are in Table 12 and lab data reports are in Appendix E.

5.2.3 Soil Pile Sampling

Between August 1 and 7, 2019, 34 soil samples were collected from the nine soil piles. The samples were collected from test pits excavated into the soil piles at varying one-foot depth intervals ranging from 1 to 6 feet. Sample locations are shown in Fig. 6.

A soil pile (SP-02) previously identified and sampled by EPA in 2010 was not observed and it appears it was in the area of the 2011 removal action. Soil excavated during the 2011 removal action was placed in the soil consolidation area (Fig. 2).

Three samples were collected from soil piles SP-01, and SP-03 through SP-09, each of which are estimated to be less than 200 cubic yards in volume. Seven samples were collected from SP-10, which is estimated to be about 1,270 cubic yards in volume. During the investigations we noted any visual or olfactory evidence of contamination, and we screened soil samples for VOCs using the jar headspace method and a PID. No visual or olfactory signs of contamination were observed. Results of the PID screening ranged from 0.0 parts per million (ppm) to 4.9 ppm. Test pit logs with details of our physical observations and the results of jar headspace screening are in Appendix J.

The soil samples were tested for PCBs. Results of PCB testing are in Table 13 and laboratory data reports are in Appendix E. Total detected PCB concentrations ranged from 1 to 23.4 ppm.

5.2.4 Concrete Slab Sampling

On August 8, 2019, GEI collected concrete samples from the five concrete slabs on Lot 2 (Fig. 7). Three of the pads were former processing areas (baler press area, small shear, and large shear). One asphalt sample was also collected from an area of asphalt that surrounds a portion of the small shear. Two other pads observed were also sampled. One at the eastern end of Lot 2 near the berm (eastern concrete pad), and one west of the 2011 soil consolidation area (western concrete pad) (Fig. 7).

The samples were collected using a hand-held rotary impact hammer drill and a 1-inch carbide drill bit in general accordance with EPA Region I's Standard Operating Procedure (SOP) for Sampling Porous Surfaces for PCBs, dated May 2011. Samples were collected from 0 to 0.5 inches for PCB analysis and from 0 to 6 inches for EPH and metals analysis.

Results of analysis are in Table 14 and laboratory data reports are in Appendix E.

5.3 Soil Disposal Characterization Sampling, Lots 1 and 2, GEI (2020)

5.3.1 Lot 1

GEI conducted investigations on Lot 1 in March 2020 on behalf of the City of Lawrence under an EPA Brownfields Cleanup Grant. The objective of the investigations was to characterize soil for offsite disposal.

On March 12, 2020, GEI observed Northern Drill Service, Inc. of Northborough, Massachusetts advance four soil borings at locations LOT1-DISP-01, LOT1-DISP-02A, LOT1-DISP-02B, and LOT1-DISP-02C (Fig. 9). The borings were advanced using a direct push Geoprobe drilling method. The soil boring at LOT1-DISP-01 was advanced to a depth of 7 feet and the soil borings at LOT1-DISP-02A, LOT1-DISP-02B, and LOT1-DISP-02C were advanced to a depth of 3 feet. All borings were advanced through a surface cover of about 3-inches of asphalt pavement. Boring logs are in Appendix F.

A composite sample was collected from Lot1-Disp-01 by compositing soil collected from the boring across the 1 to 7-foot depth interval, which is representative of the soil planned for excavation. Composite sample Lot1-Disp-02comp was collected by compositing soil from locations LOT1-DISP-02A, LOT1-DISP-02B, and LOT1-DISP-02C. Samples from Lot1-Disp-02A through C were collected across the depth interval 1 to 3 feet. A grab sample, Lot1-Disp02grab, was collected from Lot1-Disp-02B.

The samples were submitted to ESS laboratories of Cranston, Rhode Island for chemical testing. Lot1-Disp-01 was tested for VOCs, SVOCs, PCBs, RCRA 8 metals, toxicity characteristic leaching procedure (TCLP) lead, TPH, ignitability, corrosivity, reactive cyanide and sulfide. Lot1-Disp-02comp was tested for SVOCs, PCBs, TPH, RCRA 8 metals, TCLP lead, ignitability, corrosivity, reactive cyanide and sulfide and Lot1-Disp02grab was tested for VOCs.

The results of chemical testing are summarized in Table 15 and the laboratory data report is in Appendix I.

PCBs were not detected at a concentration above the laboratory reporting limit in Lot1-Disp-01 and were detected at 0.16 ppm in Lot1-Disp-02comp.

5.3.2 Lot 2

On March 12 and 13, 2020, GEI observed Northern Drill Service advance soil borings on Lot 2 (Lot 2 Disp-01 through Lot 2 Disp-06) to collect samples for soil disposal characterization. Six areas on Lot 2 where PCBs are present at greater than 100 ppm have

been identified for future excavation and offsite disposal. Boring locations are shown in Fig. 9 and boring logs are in Appendix F.

Soil borings Lot 2 Disp-01 and Lot 2 Disp-03 through Lot 2 Disp-06 were each advanced to a depth of 3 feet and Lot 2 Disp-02 was advanced to a depth of 2 feet. Soil samples were collected across the depth of each boring to generate one sample from each soil boring for chemical testing. The samples were tested for VOCs, SVOCs, PCBs, RCRA 8 metals, TCLP lead, ignitability, corrosivity, reactive cyanide and sulfide. The sample from Lot 2 Disp-03 was also tested for TCLP cadmium. Results of chemical testing are in Table 16 and laboratory data reports are in Appendix I.

6. Site Hydrogeological Characteristics

6.1 Topography

The Site is generally level at approximately Elevation +39 feet relative to the National Geodetic Vertical Datum 29 (NGVD 29), based on the United States Geological Survey (USGS) Topographic map for the Lawrence, Massachusetts Quadrangle (7.5 x 15 Minute Series).

The Property is largely unpaved and vegetated except for a paved area on the northwestern portion of the Property, which covers about one-half of Lot 1, and concrete pads on Lot 2 in areas of the former structures. The soil berms located at the eastern and southeastern limit of the Property and Site range from approximately 10 to 20 feet in height.

6.2 Geology

Site soil generally is a 3 to 6-foot layer of urban fill comprised of medium to coarse sand with gravel with some concrete, glass, metal, brick, wood, coal and ash. In boring M-4 near the eastern Site boundary, completed by Nobis in 2016, fill was observed to a depth of 11 feet.

The fill was observed within some borings to be underlain by alluvium consisting of fine to medium sand with trace amounts of silt. Within boring MW-16 near the northern Site boundary and centered east to west, completed by Nobis in 2016, the alluvium was observed to be approximately 7.5 feet thick and extended to approximately 10.5 feet bgs.

Within borings MS-01/MW-14 and MW-16 both near the northern Property boundary, completed by Nobis in 2016, a layer of glacial till was encountered at approximately 8 and 10.5 feet, respectively. The glacial till was observed to be gravel and fine to medium sand with varying amounts of clayey silt. The glacial till was observed to terminate at approximately 13 feet bgs.

Beneath the glacial till, bedrock was observed within borings MS-01/MW-14 and MW-16 at 13 feet bgs and to be weathered to at least 15 feet bgs. Based on the USGS Lawrence quadrangle Bedrock Map, bedrock at the Site is a phyllite schist and quartzite.

6.3 Hydrogeology

A summary of monitoring wells installed during investigations conducted between 1998 and 2016 is in Table 1. Depth to groundwater ranges from about 5 to 12 feet and the groundwater flow direction is to the east towards the Merrimack River. A summary of depth

to water measurements collected is in Table 2. A groundwater elevation contour plan based on groundwater elevations measured by Nobis in August 2016 is in Fig. 6. The MassDEP Phase I Site Assessment Map dated August 1, 2018 indicates that the eastern half of the Site overlies a Medium Yield Non-Potential Drinking Water Source Area.

7. Nature and Extent of Contamination

Site contamination is primarily PCBs, metals, petroleum hydrocarbons, and PAHs in soil. Low levels of some VOCs are also present in soil. Concentrations of petroleum-related and chlorinated VOCs as well as metals have been detected in groundwater samples collected from some monitoring wells, but at concentrations well below Method 1 GW-2 and GW-3 Standards.

Contamination in soil is limited to the fill, which ranges in thickness from 1 to 11 feet. The heaviest contamination is in the upper three feet and at most locations decreases with depth. PCBs, petroleum hydrocarbons, PAHs, and metals are also present in the soil piles and soil berm. The source of Site contamination is the historical use of the Property as a metals salvage facility.

7.1 Nature and Extent of Contamination in Soil

7.1.1 PCB Contamination

The distribution of PCBs in soil at depth intervals of 0 to 1 foot, 1 to 2 feet, 2 to 3 feet, and greater than 3 feet is shown in Figures 10 through 13. The distribution of PCBs in the soil berm and soil piles are shown in Figures 14 and 15, respectively.

PCBs have been detected in both surface and subsurface soil throughout the Property. Almost all soil samples collected from the upper foot have detected concentrations of PCBs. PCB concentrations are significantly higher on Lot 2 than on Lot 1. The maximum PCB concentration on Lot 1 is 24 ppm (B-05), which was detected on the southern, unpaved portion of Lot 1. PCB concentrations in soil on the northwest portion of Lot 1 are less than 1.

PCBs are greater than 50 ppm in several areas across Lot 2 and the maximum PCB concentration in soil on Lot 2 is 124,000 ppm, which was detected at a depth of 2 to 3 ft in a soil boring on the eastern portion of Lot 2 (W-07SE).

Although PCBs are generally limited to the upper three feet of fill and generally decrease with depth at a given location, PCBs greater than 1 ppm have been detected at depths greater than 3 feet in the following areas:

- Lot 2, west and southwest of the former furnace building:
 - CD-34, 3 to 4 ft, 22 ppm
 - CD-45, 3 to 4 ft, 5 ppm
 - WSB-77, 3 to 4 ft, 8 ppm

- Lot 2, former baler press area: BLR-TP1, 3 to 4 ½ ft, 5 ppm
- Lot 1, southwest portion: B-09, 5 to 7 ft, 4 ppm
- Lot 2, eastern portion: W-07SE, 3 to 5 ft, 36,140 ppm
- Lot 2, southern portion:
 - SVA-05-GEI, 3 to 5 ft, 5 ppm
 - SVA-05N, 3 to 5 ft, 2 ppm

PCBs up to 890 ppm have been detected in the soil berm and the maximum PCB concentration detected in soil piles is 79 ppm.

PCBs were also detected in surface soil on some of the abutting residential properties to the north. However, EPA's START team conducted a cleanup on the residential properties in 2011.

7.1.2 Metals Contamination

The metals arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and zinc are in the fill throughout the Property. Lead and chromium were detected at concentrations above UCLs in some samples. The UCL exceedances for metals are shown on Fig. 16.

Metals were detected in surface soil on some of the abutting residential properties to the north. However, EPA's START team conducted a cleanup on the residential properties in 2011.

7.1.3 EPH and PAH Contamination

EPH and PAHs are present in fill across the Property and in the soil berm. EPH fractions exceed UCLs in samples from two areas: EPH fraction C₁₉-C₃₆ aliphatics in SB-2 on the northwest portion of Lot 1 at a depth of 5 to 7 feet (56,800 ppm) and EPH fraction C₁₁-C₂₂ aromatics in W-07-GEI on the eastern portion of Lot 2 at a depth of 0 to 3 feet (10,800 ppm).

7.2 Nature and Extent of Contamination in Groundwater

Shallow groundwater contamination is very low levels (below Method 1 GW-2 and GW-3 Standards) of some VOCs, metals, and PAHs. Some petroleum-related and/or chlorinated VOCs were detected in groundwater samples collected from wells near the center of the Property in the area of the furnace building (MW-13), baler press area (MW-11), and large shear (MW-9), and in a well at the southeastern corner of the Property (MW-8). VOCs were not detected above the laboratory reporting limit in the two most upgradient wells (MW-1 and MW-15). Low levels of some PAHs were detected in MW-15, the most upgradient well. Metals were detected in samples collected from all wells, but at levels well below the

Method 1 GW-3 Standards, except for lead, detected at concentrations above the Method 1 GW-3 Standard in several samples. These elevated concentrations were attributed to elevated turbidity in the samples.

Vinyl chloride was detected at a concentration above the Method 1 GW-2 Standard in one sample collected from MW-7 on the southeastern portion of the Site, in 2003. However, in June 2016, MW-7 was replaced with MW-8 and although vinyl chloride was detected in the sample collected by MW-8 in June 2016, the concentration was below the Method 1 GW-2 Standard.

7.3 Nature and Extent of Contamination in Sediments and Catch Basin Soil

7.3.1 PCB Contamination

PCBs were detected in sediment samples collected in the Merrimack River by Weston in 2003 from a depth of 0 to 1-foot at locations both upstream and downstream of the Site, and in soil from a Property catch basin sample. PCBs measured in an upstream sample (RSED1) were 0.07 ppm (Aroclor 1242) and in a downstream sample (OUTFALL1) were 3.48 ppm (Aroclor 1242). The Aroclor 1260 was detected in the soil sample collected from a Property catch basin (CB1) at a concentration of 1.64 ppm.

The Aroclors 1254 and/or 1260 were detected in two of the nine sediment samples collected from the Merrimack River by H&A in 2002. However, the specific locations of those samples are not known.

7.3.2 Metals Contamination

The metals arsenic, barium, cadmium, chromium lead, mercury, and silver were detected in the upstream and downstream sediment samples collected from the Merrimack River as well as the Property catch basin sample.

7.3.3 EPH Contamination

The EPH fractions C₁₉ - C₃₆ aliphatics and C₁₁-C₂₂ aromatics were detected in the upstream and downstream sediment samples collected from the Merrimack River as well as the Property catch basin sample.

7.4 Delineation of the Site Boundary

The Site boundary is shown in Fig. 2 and is generally defined by the extent of historic metals recycling operations, which were limited to the 207 Marston Street property (the Property).

The Site boundary is limited to the west by the Property boundary. The Site extends beyond the Property boundary to the east onto a portion of the MassDOT easement for I-495. The Site is defined by the Property boundary to the north, except for a limited area where the Site extends onto portions of four residential properties where targeted removal actions were conducted by EPA. The Site boundary to the south is defined by the Property boundary.

Site contaminants, including PCBs, metals, and EPH fractions, have been detected in sediments in the Merrimack River. However, it has not been confirmed if Site contamination is the source of contamination in the Merrimack River.

8. Environmental Fate and Transport of OHM

8.1 Identification of Site Contaminants of Potential Concern

Contaminants of concern (COCs) in soil include PCBs, metals, EPH fractions, PAHs and VOCs. COCs in groundwater, although present at very low concentrations, include VOCs and metals. PCBs, metals, and EPH have been detected in sediments in the Merrimack River.

8.2 Characteristics of Site COCs

The characteristics of the Site COCs include type of compound, chemical composition, physical and chemical properties, toxicological characteristics, and environmental fate and transport characteristics. Environmental fate and transport characteristics include mobility, stability, volatility, and bioaccumulation potential.

The primary chemical and physical properties of the contaminants that affect their fate and transport in Site media are: molecular weight, vapor pressure, water solubility, Henry's Law constant, specific gravity, water-carbon partition coefficient, and octanol-water partition coefficient. Sources of chemical, physical, and fate and transport characteristics were obtained from literature, including the Agency for Toxic Substances and Disease Registry website (www.atsdr.org).

The Site COCs are typically found in environmental media in groups, based on common sources and environmental fate and transport characteristics. Accordingly, the COCs were grouped together for the discussion of environmental fate and transport characteristics.

8.2.1 PCBs

PCBs have a high molecular weight, low vapor pressures, low Henry's Law constants, low solubilities, and higher specific gravities than water. PCBs bind strongly to soil and sediments and may remain there for long periods. They tend not to volatilize into soil gas or the atmosphere.

PCBs are very stable compounds and do not degrade readily in environmental media. PCBs can be present in groundwater at low concentrations or adhered to small particles of soil present in the water samples. However, PCBs were not detected in Site groundwater samples. PCBs were commercially produced as complex mixtures containing multiple congeners at different degrees of chlorination. Likely, the most significant risk from PCBs is their persistence in environmental media and high bio-accumulative properties in organisms.

8.2.2 Metals

Metals are naturally occurring elements. Sources of metals in the environment include erosion of geologic materials, use and storage of refined metals for paints, poisons, gasoline manufacturing and use, and other manufacturing processes. Metals are also combustion byproducts. The primary metals found in Site soil are arsenic, barium, chromium, lead, and mercury.

Metals tend to be immobile in the environment, because they have low solubilities and low soil/water partition coefficients, indicating that they prefer to stay in solid forms or sorbed to soil and sediment. Metals are not degradable in the environment though they may undergo changes in valence state that can change their mobility and bioavailability. The physical and chemical conditions present at the Site influences how metals will migrate in the environment. The behavior of metals is influenced by environmental factors such as pH, Eh, temperature, hydrostatic pressure, and the presence of complexing agents. For example, the presence of soil organic matter, as measured by total organic carbon represents a physical condition that may sorb heavy metals and prevent them from migrating. Metals with a greater affinity to bind with organic carbon or acid volatile sulfide in sediment tend to exhibit the least toxicity to benthic organisms. Metals that partition to the interstitial (pore) water exhibit the greatest sediment toxicity.

8.2.3 SVOCs/PAHs

In general, SVOCs have high molecular weights, low water solubilities, low vapor pressures, low Henry's Law constants, high carbon water partition coefficients, and moderate to high octanol water partition coefficients. These chemicals tend to sorb to soil or sediment rather than dissolve into groundwater and tend not to volatilize into soil gas or the atmosphere. The tendency to sorb to soil increases with an increase in the number of aromatic rings in the compound.

PAHs are a subgroup of SVOCs that are of concern at the Site. PAHs are compounds with two or more fused benzene rings. Some PAHs can be carcinogenic as well as toxic to organisms. PAH sources can be generalized into two groups: (1) petrogenic and (2) pyrogenic. Petrogenic sources include petroleum product manufacturing, storage, and use. Pyrogenic sources include combustion byproducts.

Although PAHs are discussed as a group and their concentrations are often expressed as total PAHs, individual PAH compounds exhibit a wide range of physical and chemical properties that influence their distribution, mobility, and availability in environmental media. Lower molecular weight PAHs (i.e., the 2 to 4 ring PAHs) tend to degrade biologically (in most media) or photochemically (in surface water) and are more available to partition to porewater. These properties generally decrease with increasing molecular weight.

A study (Rockne et al., 2002) found that sediment characteristics also influence the distribution of PAHs. PAHs preferentially sorb to the low-density fraction and partition to the young detrital material present in sediment. This study suggests that sediment characteristics together with PAH properties can predict the ability of PAHs to desorb from sediment and the potential availability of PAHs to benthic organisms.

8.2.4 EPH

EPH fractions include groups of petroleum hydrocarbons, classified by MassDEP to include compounds with 9 to 36 carbon atoms. EPH compounds include aliphatic and aromatic hydrocarbons, and 17 target PAHs. Different types of petroleum hydrocarbons are detected and quantified using EPH analyses, including diesel/No. 2 oil, No. 3 to No. 6 fuel oil, kerosene, aviation fuel, mineral oil dielectric fluid (MODF), and waste oil.

EPH compounds are divided into two aliphatic fractions (C₉-C₁₈ and C₁₉-C₃₆) and one aromatic fraction (C₁₁-C₂₂). In general, EPH compounds have a low solubility in water and a lower specific gravity than water. The C₉-C₁₈ aliphatic fractions in EPH, that tend to occur in diesel fuel, have a low to moderate viscosity, moderate interfacial tension, are relatively insoluble in water, are slightly volatile, will sorb to sediment organic carbon and solids, and are moderately to highly biodegradable. In contrast, the C₁₉-C₃₆ aliphatic fraction and the C₁₁-C₂₂ aromatic fraction have higher viscosities, are insoluble, and are less biodegradable.

8.3 Existing and Potential Migration Pathways

The existing or potential migration pathways for the COCs detected in Site media are soil gas, air, groundwater, surface water, sediment, and food chain.

Soil gas is a potential migration pathway because some or volatile COCs present in soil may volatilize into soil gas, which can then emanate from the subsurface into indoor air or ambient air. The Site is currently vacant and vapor intrusion is not a complete exposure pathway.

Ambient air is a potential migration pathway for contaminants in surface soil because fugitive dust emissions from wind or mechanical disturbances may occur from unpaved or unvegetated areas of the Site. The potential for human exposure to contaminated soil is limited to by the presence of a fence around the perimeter of the Property.

Concentrations of COCs in groundwater are very low and appear to be localized. COCs do not appear to have migrated from source areas to other areas of the Site via groundwater.

Contaminants in surface soil could migrate to surface water and sediment as suspended solids in storm water that enters the storm drain system and discharges to the Merrimack River.

The food chain is a potential migration pathway due to the presence of bioaccumulating COCs in surface soil at the Property.

9. Representativeness Evaluation and Data Usability Assessment

The purpose of a Representativeness Evaluation and Data Usability Assessment (REDUA) is to evaluate the extent to which a data set used to support a Temporary or Permanent Solution meets specific site characterization and data usability objectives. We performed a REDUA in accordance with MassDEP Policy WSC No. 07-350, “MCP Representativeness Evaluations and Data Usability Assessments,” dated September 19, 2007.

Investigations were conducted by various entities from 1998 through 2000. Soil and groundwater data were reviewed and evaluated for representativeness and usability. As described in more detail in this REDUA, only data collected from 2003 through 2020 were used in the Risk Characterization. Data collected prior to 2003 were not used in the Risk Characterization either because laboratory data reports were not available and the quality of the data is not known; more recent data was collected to replace those earlier data and is considered more representative of current conditions; or the area represented by the sample(s) was later excavated during a removal action. However, data collected prior to 2003 were reviewed and used to evaluate if subsequent investigations adequately characterized contaminant conditions or if those areas require further evaluation.

Summary tables of data collected prior to 2003 are in Appendix D. Data collected from 2003 through 2020 are summarized in Tables 3 through 16. Investigation locations are shown in Figures 5 through 9.

9.1 Representativeness Evaluation

9.1.1 *Conceptual Site Model*

Refer to Section 1.3 for the CSM.

9.1.2 *Field and Screening Data*

Soil samples collected by Nobis in 2016, Credere in 2019, and GEI in 2019 and 2020 were screened in the field for VOCs using the jar headspace screening method with a PID. Results of VOC screening were documented on boring logs along with visual and olfactory observations of soil conditions. Between 2003 and 2005, Weston conducted several soil boring and sampling events. According to the reports prepared by Weston, soil samples were field screened for VOCs; however, boring logs were not available and the results of field screening unknown.

Field screening data were not used for characterizing exposure point concentrations. We reviewed field and screening data with the associated laboratory chemical data as part of the data quality assessment. Field screening results and observations were consistent with laboratory chemical results. Field screening results are generally low, which is consistent with the COCs. No significant inconsistencies were identified in the data used to support the Risk Characterization given the number of samples collected and the locations where they were collected.

9.1.3 Sampling Rationale

The source of Site contamination is historical scrap metal recycling operations. Soil and groundwater sampling were conducted to evaluate the nature and horizontal and vertical extent of contamination. Soil sampling included grid sampling across the Property as well as targeted sampling at potential source areas and areas where grid sampling indicated elevated contaminant concentrations. The abutting residential properties to the north were also sampled to evaluate the potential for migration of Site soil contamination in airborne dust. Monitoring wells were installed for the collection of groundwater samples across the Property at potential source areas as well as locations upgradient and downgradient of potential source areas.

Soil samples were collected throughout the soil piles and soil berm. Soil berm sampling was conducted on a grid and at various depths into the berm.

Sediment samples from the Merrimack River were collected by others to evaluate the potential for migration of Site contaminants in a stormwater drainage system on the Property. However, this evaluation is not complete.

Overall, the soil and groundwater sampling locations were sufficient to delineate disposal site boundaries, identify background, calculate exposure point concentrations, evaluate the potential for Hot Spots, identify exposure pathways and receptors, and demonstrate source elimination or control.

9.1.3.1 Soil

Soil samples were collected from varying depths to evaluate the vertical and horizontal extent of contamination in soil. Most of the sampling was conducted in the upper three feet and deeper samples were analyzed to evaluate depth extent where contaminant concentrations in shallower soil was elevated. Soil samples from 0 to 13 feet were included in the Risk Characterization. The soil sampling density was greater in areas with elevated PCB concentrations. The soil sampling density was also greater at the limits of EPA's 2018 removal areas to document PCB concentrations remaining at the bottom and sidewalls of the excavation areas.

Soil samples were primarily analyzed for PCBs, metals, and EPHs with target PAHs. Samples for VOC analysis were also collected to evaluate VOCs as a COC. Soil samples for cyanide analysis were collected from the former furnace building; however, cyanide was not detected at concentrations above the laboratory reporting limit and no further cyanide testing was conducted.

9.1.3.2 Groundwater

Monitoring wells were installed to evaluate the horizontal extent of contamination in shallow groundwater. Only the most recent round of groundwater data from samples collected by Nobis in 2016 and Credere in 2020 were included in the Risk Characterization. These data are considered more comprehensive and representative of current groundwater conditions than data collected in 1998, 1999, and 2003. Historical groundwater data and the 2016/2020 groundwater data were generally consistent.

The 2016 groundwater samples were tested for VOCs, EPHs with target PAHs, PCBs, and total metals. Some of the samples were also tested for cyanide. One of the samples where total metals were elevated, was also tested for dissolved metals. The sample collected in 2020 was collected from a newly identified area of elevated EPH fractions, tested only for EPH and target PAHs.

9.1.3.3 Sediment

Sediment samples were collected from the Merrimack River by H&A in 2002 and by Weston in 2003; however, sample locations were not depicted in figures included in previous reports. Weston also collected a soil sample in 2003 from a catch basin on the Property. The samples collected in 2002 were tested for PCBs and the samples collected in 2003 were tested for EPH fractions, PCBs, and metals. The laboratory data reports for the samples collected in 2002 were not available.

9.1.4 Sample Number, Spatial Distribution, and Sample Handling

The spatial distribution of soil and groundwater sampling conducted within the limits of the Property is shown in Fig. 5 and Fig. 6, respectively. The spatial distribution of soil sampling within the soil piles and soil berm is shown in Fig. 7. Additional figures showing sample locations on the abutting residential properties to the north, the grid layout of samples collected in 2010, and verification soil samples collected at the base of the 2011 removal area are in Appendix D.

Given the size of the Site and the nature of contamination, the available data are adequate to define the nature and extent of contamination and are representative of conditions at the time of sampling.

Collection and handling of soil and groundwater samples from 2003 through 2020 used to support the Risk Characterization were as follows:

- Prior to August 1, 2003: This includes soil samples collected by Weston in February and July 2003 as part of the Phase II CSA. Based on the information provided in the Phase II CSA, including a description of soil sample collection and handling and a review of the chains of custody, these samples to the best of our knowledge were collected, preserved, and handled consistent with the industry-accepted methods at that time.
- August 1, 2003 to June 30, 2010: This includes soil samples collected by Weston in September 2003 as part of the Phase II CSA and in May 2005 as part of supplemental investigations. Based on the information provided in the Phase II CSA, including a description of soil sample collection and handling and a review of the chains of custody, these samples to the best of our knowledge were collected, preserved, and handled consistent with the 2003 MassDEP Compendium of Analytical Methods (“WSC No. 10-320: *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols*,” dated August 1, 2003 [2003 CAM]) using the appropriate sampling, preservation, and handling techniques for each of the matrices analyzed.

Details of the collection and handling of samples collected in May 2005 were not available. However, based on Weston’s sample collection and handling procedures described in the Phase II CSA, we have assumed that similar procedures were followed in May 2005.

- Following July 1, 2010: This included the following data sets:
 - Soil samples collected by EPA’s START team in October 2010: Based on information provided in EPA’s 2010 PA/SI report, samples were collected in accordance with a site-specific Sampling and Analysis Plan and documented in a chain-of-custody record using EPA’s CRIBE sample database software to document samples from collection through transportation to the laboratory. Based on a review of the available chains-of-custody, sample containers and preservation used were appropriate for the matrix analyzed.
 - Soil samples collected by Tighe & Bond at the limits of the 2011 removal area in May 2011: Based on the information provided in the Removal Actions – AOC Summary Report documenting collection of these samples, the samples were collected in accordance with a Field Sample Collection and Laboratory Protocol letter submitted to EPA on April 22, 2011. No further details of sample collection and handling were available; however, based on a review of the available chains-of-custody and the MADEP MCP Response Action Analytical Report

Certification provided with the laboratory data report, sample containers and preservation used were appropriate for the matrix analyzed.

- Soil and groundwater samples collected by Nobis in June 2016 as part of the TBA: Based on information provided in the 2016 TBA report, samples were collected in accordance with a June 2016 Field Task Work Plan and QAPP Addendum. Based on a review of sample collection and handling methods described in the TBA report, the sampling, preservation and handling techniques for each of the matrices analyzed was appropriate.
- Soil samples collected by EPA in December 2018 at the limits of its 2018 removal area: Details of sample collection and handling methods were not available. However, chains-of-custody were available and preservation for the matrix analyzed was appropriate.
- Soil samples collected by Credere in September and December 2019 and a groundwater sample collected in January 2020: Credere conducted its investigations in accordance with procedures detailed in a site-specific QAPP and QAPP Addendum submitted to and approved by EPA. Based on a review of chain-of-custody records and MassDEP analytical report certification forms included in the laboratory data reports, which address sample preservation, sample management and preservation was appropriate for the matrices analyzed.
- Soil samples collected by GEI from July 2019 through March 2020: GEI conducted investigations in accordance with site-specific QAPPs for both Lot 1 and Lot 2 that were approved by EPA. Appropriate sampling, preservation, and handling techniques for the matrix analyzed were followed.

Based on a review of available information regarding sample collection, preservation, and handling techniques, including documentation in reports previously submitted to MassDEP, chain-of-custody records, and MassDEP analytical report certifications provided in many of the lab data reports, samples were collected consistent with the 2010 MassDEP Compendium of Analytical Methods (WSC No. 10-320: Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols,” dated July 1, 2010 [2010 CAM]) using the appropriate sampling, preservation and handling techniques for each of the matrices analyzed.

9.1.5 Temporal Distribution

9.1.5.1 Soil

The soil data set used to support the Risk Characterization includes samples collected from 2003 through 2020. Soil contaminants are not expected to vary seasonally, so samples were not collected to specifically represent seasonal variation.

9.1.5.2 Groundwater

Groundwater sampling was conducted in July 1998, June 1999, February 2003, June 2016, and January 2020, representative of winter and late spring/summer seasons. Only results from 2016 and 2020 were used in the Risk Characterization. The results of sampling conducted in 2016 by Nobis were consistent with the earlier data sets and are considered most representative of current conditions and was therefore used in the Risk Characterization. Based on the consistent data between spring/summer and winter data sets, additional rounds of groundwater sampling to represent seasonal variation were not warranted.

9.1.5.3 Sediment

Sediment data was collected in September 2002 and February 2003. Contaminants in sediment are not expected to vary seasonally, so samples were not collected to specifically represent seasonal variation.

9.1.6 Data Completeness

The spatial distribution of samples was adequate to meet the data quality objectives. No post-CAM data was rejected for quality assurance/quality control reasons. No pre-CAM data was identified that were inconsistent with the post-CAM data or with the Site history and CSM. No data gaps related to sample distribution or data quality were identified; therefore, the data set is considered 100% complete.

9.1.7 Data Inconsistency and Uncertainty

There is no inconsistency or uncertainty associated with the data used to support the Risk Characterization, given the number of samples collected and the locations at which they were collected.

9.1.8 Information Considered Unrepresentative

The following data were considered unrepresentative of current conditions at the Property and were excluded from the Risk Characterization.

- Groundwater data collected in 1998 by WZB, 1999 by HEA, and 2003 by Weston. Only the most recent round of groundwater data collected by Nobis in 2016 and Credere in 2020 was used in the Risk Characterization. The 2016 groundwater data were found to be generally consistent with past data and are considered representative of current conditions.

- Soil data collected in 1998 by NEDT under RTN 3-16817 (Section 4.1). The soil data collected by NEDT in 1998 largely consisted of TPH data and subsequent EPH data was collected by others. Significant sampling of known quality was later conducted that is considered representative of conditions in the previously sampled areas.
- Soil data collected in 1998 by WZB as part of a due diligence ESA (Section 4.2). Lab data reports for WZB's 1998 data were not available, therefore the quality of these data is unknown. Significant sampling of known quality was later conducted that is considered representative of conditions in the previously sampled areas.
- Soil data collected by HEA in 1999 (Section 4.3 and 4.4). These data are considered outdated and not representative of current conditions. Significant sampling of known quality was later conducted that is considered representative of conditions in the previously sampled areas.
- Soil and sediment data collected by H&A in 2001 and 2002 (Section 4.5). Laboratory data reports were not available for these data. Significant sampling of known quality was later conducted that is considered representative of conditions in the previously sampled areas. Although not included in the Risk Characterization, the soil data were used to evaluate areas requiring additional investigation. The sediment data were not further evaluated.
- Soil data collected by Weston in 2007 behind the residential properties (Section 4.8). The area where these data were collected was excavated in 2011 and placed in the soil consolidation area. These data were consistent with other data collected in the same area (EPA, 2010 soil data; Section 4.10) that was also excavated and placed in the soil consolidation area. Therefore, the data collected in 2010 that is representative of soil placed in the soil consolidation area was considered adequate to characterize conditions in the soil consolidation area, and the 2007 data collected by Weston was not used in the Risk Characterization.
- Soil data collected on the abutting residential properties to the north by Shaw in 2007 and Weston in 2011 (Section 4.9). The Risk Characterization is limited to an evaluation of contaminant concentrations in Property soil.
- Soil data representative of areas excavated during EPA's 2018 targeted removal action.

9.2 Data Usability Assessment

The Data Usability Assessment has an analytical and a field component.

9.2.1 Analytical Data Usability Criteria

GEI assessed the analytical data quality of the soil and groundwater data used to support the Risk Characterization. Although GEI identified some quality issues related to the data, it is our opinion that the issues do not materially impact the overall quality of the data or the conclusions of the Risk Characterization. The data is consistent with the CSM.

9.2.1.1 Data Prior to August 1, 2003

Chemical testing data generated prior to the issuance of the 2003 CAM protocols were used to support the Risk Characterization. The analytical methods for these samples were consistent with standard practice for the time at which they were collected and are generally consistent with those identified in the 2003 CAM. These data were consistent with field observations and were of a level of precision and accuracy necessary for the preparation of this Revised Phase II CSA and Risk Characterization. Specifically:

- February 2003 Soil Samples by Weston – Methods used (6010/7471 for metals, 8082 for PCBs, MA EPH, 8260B for VOCs) were consistent with standard practice for that time and are consistent with those identified in the 2003 CAM. The extraction method for PCB analysis of the February 2003 samples was not specified. Weston performed a modified Tier II data review including a review of hold times, sample preparation, method blanks, surrogate recoveries, matrix spike recoveries, field duplicate results, lab control spike recoveries, and laboratory duplicates. Although several surrogates in the EPH and PCB analyses could not be quantitated, other QC limits were met and the data were found usable. The laboratory data report included notes on quality assurance/quality control (QA/QC) procedures consistent with the 2003 CAM. Per the QA/QC data, none of the results were rejected.
- July 2003 Soil Samples by Weston – Method used (3540C/8082) was consistent with the standard practice for that time and is consistent with the method identified in the 2003 CAM.

9.2.1.2 Data Between August 1, 2003 to June 30, 2010

Chemical testing data generated after the issuance of the 2003 CAM protocols but before the issuance of the 2010 CAM protocols were used to support the Risk Characterization. The analytical methods for the historical samples were consistent with standard practice for the time at which they were collected, are consistent with those identified in the 2003 CAM, and are also generally consistent with those identified in the 2010 CAM, except as described below. These data were consistent with field observations and were of a level of precision and accuracy necessary for the preparation of this Revised Phase II CSA and Risk Characterization. Specifically:

- September 2003 Soil Samples by Weston – Method used (3540C/8082) was consistent with the standard practice for that time. According to Weston, the laboratory had not been informed of the requirement to meet MCP presumptive certainty and therefore the lab did not submit an MCP Response Action Analytical Report Certification Form. However, Weston performed a modified Tier II data review of the data. Although some lab QC limits were not met and the lab did not confirm positive Aroclor results on a second column, the overall quality of the data was found to be good and useable for its intended purpose.
- May 2005 Soil Samples by Weston – Six soil samples from WSB-81 and WSB-82 were collected by Weston for PCB analysis in May 2005. Laboratory data reports were not available. However, we have assumed that the methods used and data quality is consistent with the samples collected by Weston during is February, July, and September 2003 investigations and that the quality of the data is suitable for its intended purpose. Therefore, these data were included in the Risk Characterization.

9.2.1.3 Data After July 1, 2010

Data generated after July 1, 2010 includes data generated by others as well as by GEI. Generally, data collected by EPA's START team in October 2010 and December 2018 were analyzed in accordance with EPA methods and procedures and were not analyzed in accordance with CAM methods. All other data collected was analyzed in accordance with CAM methods.

- October 2010 Soil Samples by EPA's START Team: Soil samples were analyzed by the US EPA New England Laboratory for PAHs by EPA Region I SOP, EIASOP-BNAS3 (a method based on 8270C), PCBs by EPA Region 1 SOP, FLDPCB2.SOP (a soil field method), metals by EPA Region I SOP, EIA-FLDXRFN3 (XRF method). The data were reportedly reviewed in accordance with internal verification procedures described in the EPA New England OEME Chemistry QA Plan. GEI reviewed the laboratory QC results for exceedances that would result in rejection of the sample data. Although some data quality issues related to these data were identified it is our opinion that the data quality issues do not materially impact the overall quality of the data and the data were deemed usable.
- May 2011 Soil Samples by Tighe & Bond: Methods used (3540C/8082 for PCBs and 6010B/7471A for metals) were consistent with those identified in the 2010 CAM. Laboratory data reports included notes on quality assurance/quality control (QA/QC) procedures consistent with the 2010 CAM. Per the QA/QC data, none of the results were rejected.
- June 2016 Soil and Groundwater Samples by Nobis: Methods used (8260 for VOCs, 6010/7471/7196 for metals, MA EPH, 3540C/8082 for PCBs, 9014 for cyanide) were

consistent with those identified in the 2010 CAM. Laboratory data reports included notes on quality assurance/quality control (QA/QC) procedures consistent with the 2010 CAM. Per the QA/QC data, none of the results were rejected.

- December 2018 Soil Samples by EPA’s START Team: Soil samples were analyzed by U.S. EPA’s contract laboratory for PCB Aroclors by Method @OM02. Aroclors by CLP SOW SOM02.4. EPA performed a Tier I validation of the data. GEI reviewed the laboratory QC results for exceedances that would result in rejection of the sample data. Although some data quality issues related to these data were identified it is our opinion that the data quality issues do not materially impact the overall quality of the data and the data were deemed usable.
- September and December 2019 Soil and Groundwater Samples by Credere: Methods used (3540C/8082 for PCBs, MA EPH, 8260C for VOCs, 6010D/7471B/7196A for metals) were consistent with those identified in the 2010 CAM. Samples were collected and analyzed in accordance with project specific QAPPs submitted to and approved by EPA. Laboratory data reports included notes on quality assurance/quality control (QA/QC) procedures consistent with the 2010 CAM and both GEI and Credere performed an internal review of the data. Qualifiers were applied to the data as applicable and are reflected in the data summary tables. Although some data quality issues related to these data were identified it is our opinion that the data quality issues do not materially impact the overall quality of the data and the data meet the criteria for “Presumptive Certainty” as identified in the 2010 CAM.
- July 2019 through March 2020 Soil Samples by GEI: Methods used (3540C for PCB Aroclors, MA EPH, 6010/7471/7196 for metals, 8260 for VOCs, TPH by 8100M, SVOCs by 8270D, ignitability by 1010, corrosivity by 9045D, Reactive cyanide and sulfide by SW846 Chapter 7) and were consistent with those identified in the 2010 CAM. Samples were collected and analyzed in accordance with project specific QAPPs submitted to and approved by EPA. We performed an internal Level 2 data review according to our Standard Operating Procedure; MassDEP Policy WSC No. 10-320; and U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review, USEPA-540-R-2017-02 (January 2017) and the USEPA National Functional Guidelines for Superfund Inorganic Methods Data Review, USEPA-540-R-2017-001 (January 2017).
- The internal data review included an assessment of the data reported by the laboratory for extraction efficiency (surrogate recovery), analytical accuracy (laboratory control sample [LCS], etc.), and analytical precision (laboratory duplicates, LCS duplicates, field duplicates, etc.). Data qualifiers were applied as applicable and are reflected in the data summary tables. Although GEI identified some data quality issues related to these data it is our opinion that the data quality issues do not materially impact the

overall quality of the data and GEI's data meet the criteria for "Presumptive Certainty" as identified in the 2010 CAM.

9.2.2 Field Data Usability Criteria

MassDEP Policy WSC No. 07-350 requires an evaluation documenting that parties provided the laboratory with a sufficient volume of sample, in an appropriate container, properly preserved and within a time that will not compromise analytical holding times for the analytes specified. Laboratory analytical reports, including chain-of-custody forms for environmental samples collected, were provided in previous regulatory reports submitted to MassDEP or are appended to this report.

Some of the 2016 soil samples collected by Nobis were analyzed for pH and ORP outside of hold time and the 2019 soil samples for low level VOC analysis collected by Credere were outside hold time for freezing. However, these data were reviewed and found useable for their intended purpose.

Overall, the requirements for sufficient volume of sample, appropriate sample containers, and preservation were met for the analytical data used to support the Risk Characterization.

9.2.3 Rejected Data

Except for the data described in Section 9.1.8 as unrepresentative of current conditions, no data were rejected.

9.2.4 Conclusions

The data set used to support the Risk Characterization is scientifically valid and defensible and is of sufficient accuracy, precision, and completeness. In addition, the data set is representative of the spatial and temporal distribution of sampling points.

10. Combined Method 1 and Method 3 Risk Characterization

We performed a combined Method 1 and Method 3 Risk Characterization (Risk Characterization) in accordance with the MCP (310 CMR 40.0900) to evaluate the potential harm posed by contaminant conditions within the 207 Marston Street property (the Property) to human health, public welfare, safety, and the environment. As discussed in Section 1.1, the City is not an RP or PRP, is performing response actions as an “Other Party,” and under the Brownfields Act of 1998 qualifies as an Eligible Person and is responsible only for the cleanup of soil contamination within its property boundaries. The purpose of this Risk Characterization is to evaluate the potential harm posed by contamination within the Property to support the evaluation and selection of a remedial action alternative that will allow the future development of the Property.

A combined Method 1 and Method 3 Risk Characterization was performed because PCBs are known to bioaccumulate and were detected within two feet of the ground surface, requiring a Method 3 risk characterization to characterize the risk of harm to public welfare and the environment. Site COCs are not present at the Property in media other than soil and groundwater and there are MCP Method 1 standards for all COCs, therefore, a Method 1 risk characterization was used to characterize the risk of harm to human health. A separate evaluation of the risk of harm to safety was also performed, as required.

The Method 1 Risk Characterization was prepared based on the characterization of potential receptors, current and foreseeable Property uses, contaminants of concern, and exposure point concentrations (EPCs). If soil EPCs are less than the applicable Method 1 standard, then a condition of NSR of harm to human health exists at the Property. The Method 1 Risk Characterization was completed using samples representative of Property soil and groundwater.

10.1 Current and Reasonably Foreseeable Site Activities and Use

The Property is owned by the City of Lawrence, which acquired the Property in May 2016 through foreclosure of tax title. The Property is vacant and is surrounded by a gated and locked chain link fence to restrict access. Maintenance of the fence is required to mitigate an Imminent Hazard condition posed by PCBs in surface soil at concentrations greater than 10 ppm.

The City plans to sell the Property for future redevelopment, likely commercial/light industrial use or multi-family/mixed-use housing. Single-family housing will be prohibited. No development plans have been prepared.

GEI assumed the following for the risk characterization:

- An Activity and Use Limitation (AUL) will be implemented that will restrict future single-family use, agriculture, and fruit and vegetable gardening.
- There are no current or foreseeable uses of Property groundwater as drinking water.
- Soil in the piles and berms will either be removed from the Property or placed in an on-site consolidation area under a cap.

10.2 Identification of Potential Receptors

The identification of potential receptors under the MCP is the process of identifying potential on-site and surrounding area receptors, both human and environmental, who may come into contact with COCs in various media (such as soil and groundwater).

10.2.1 Potential Human Receptors

Potential human receptors were identified based on current and foreseeable uses of the Property. The Property is owned by the City of Lawrence and is vacant. Under current use, potential human receptors include utility workers and trespassers. Under future use, the Property could be re-developed for commercial/light industrial use or multi-family/mixed use housing. Under future use, construction workers, commercial workers, residents and the general public are potential human receptors.

10.2.2 Potential Environmental Receptors

The Property was historically used as a scrap metal facility and is developed with paved areas, structures associated with its former use as a scrap metal facility, and concrete foundations of former structures. The Property is currently a vacant, industrial lot with paved areas as well as areas colonized by ruderal colonizers (weeds, grasses, shrubs). Based on a review of the MassGIS Phase I Site Assessment Map, there are no species of concern, threatened species, or endangered species at the Property. The Property contains no surface water bodies or wetlands. Due to the developed nature of the Property, there are no ecological receptors of concern within the boundaries of the Property.

10.3 Identification of Soil and Groundwater Categories

This section identifies and documents the applicable soil and groundwater categories, as described in the MCP (310 CMR 40.0930). The soil and groundwater categories are considered general indicators of the potential for exposure to oil and hazardous material (OHM).

10.3.1 Soil Categories

Under the MCP, soil can be classified into one of three categories (S-1, S-2, or S-3). Category S-1 soil represents the highest potential exposure because it assumes the unrestricted use of the soil (i.e., residential), whereas category S-3 soil represents the lowest potential for exposure.

Under current land use conditions, because the Property is vacant, adult use is considered low frequency and low intensity. Children are not likely to be present under current conditions, except for a trespasser who may be present at a low frequency and low intensity. Therefore, based on the soil category selection matrix provided in 310 CMR 40.0933(9), accessible soil and potentially accessible soil (0 to 15 feet) at the Property is category S-2 soil, and isolated subsurface soil under the footprint of a building or permanent structure at the Property is category S-3 soil. Based on the soil category selection matrix provided in 310 CMR 40.0933(9), under current land use, Property soil is category S-2 soil, as well as, S-3 soil.

Under future land use conditions, adult use may be high frequency and low intensity, except for potential future construction worker use, which may be categorized as low frequency and high intensity. If developed for multi-family/mixed-use, children may be present at a high frequency and low intensity based on potential future passive activities at the Property. However, as described below, an AUL is planned that will limit accessibility to soil. Based on the soil category selection matrix provided in 310 CMR 40.0933(9), under future land use, Site soil is category S-2 soil, as well as, S-3 soil.

The MCP requires that all soil at a site be evaluated as S-1 soil unless an AUL is placed on the site. An AUL is a deed restriction designed to prevent activities on a site that may cause a potential risk to human health, public welfare, or the environment. An AUL will be placed on the Property to restrict future single-family residential development and limit accessibility to soil if developed for multi-family, light industrial/commercial use. Therefore, soil at the Property does not need to be evaluated as S-1.

10.3.2 Groundwater Categories

Under the MCP (310 CMR 40.0932), there are three categories for groundwater (GW-1, GW-2, and GW-3) that may apply to a specified volume of groundwater or to an entire aquifer. These groundwater categories were established to identify groundwater associated with the following three distinct types of exposures:

- GW-1 applies to groundwater assumed to be a current or future source of drinking water.

- GW-2 applies to groundwater considered to be a potential source of vapors that could migrate through the soil and concentrate in indoor air of existing, occupied buildings.
- GW-3 applies to groundwater that is assumed to discharge to surface water. All groundwater in the Commonwealth is classified as GW-3.

Because the exposures are not necessarily related to each other, they are not mutually exclusive. Therefore, more than one groundwater category may be applicable to a site or different areas of a site.

There are multiple groundwater monitoring wells present at the Property. Depth to groundwater ranges from about 5-feet to about 12-feet. The Property is not located within a public-drinking water supply area. No occupied buildings are located on the Property. Based on this information, the applicable groundwater category for the Property under current land use is GW-3.

10.4 Summary of Analytical Results

10.4.1 Soil Analytical Results

We reviewed and evaluated soil data for use in the Method 1 Risk Characterization to identify potential exposure points and derive EPCs.

As described in Section 9.1.8, soil data collected prior to 2003 were not considered representative of Site conditions and/or of appropriate quality and were excluded from the Risk Characterization. Soil samples representative of areas that were later re-sampled were also excluded as were soil samples representative of areas excavated during EPA's 2018 targeted removal. Soil data collected from the soil piles and the berm were also excluded from the Risk Characterization as the soil in the piles and berms will either be removed from the Property or placed in an on-site consolidation area under a cap. A summary of soil samples collected in 2003 or later that were excluded from the Risk Characterization and the reason for excluding these data, is in Table 17.

Soil data used in the Method 1 Risk Characterization are presented in Tables 4, 5, 7, 8, and 11. Samples in these tables that were not included in the Risk Characterization, are shaded in the tables. EPCs and other summary statistics are presented in Table 18.

10.4.2 Groundwater Analytical Results

Only the most recent set of groundwater data, collected in 2016 by Nobis and one sample collected by Credere in 2020, were used in the Risk Characterization (Table 6).

10.4.3 Hot Spot Evaluation

Under the MCP (310 CMR 40.0924), hot spots must be considered as distinct exposure points. 310 CMR 40.0006 defines a hot spot as a “discrete area” where concentrations are “substantially higher than those present in the surrounding area”:

- If the concentration is 10 to 100 times greater than the average concentration in the surrounding area, then a hot spot is present unless the potential exposure to receptors is no greater than in the surrounding area; or
- If the concentration is 100 times greater than in the surrounding area, then a hot spot is present.

We conducted a discrete exposure area analysis for soil and groundwater. There is no evidence of greater exposure potential within any discrete areas of the Property. We assumed there is an equal likelihood of potential exposure to soil within each exposure point. We considered discrete areas of contamination to be potential hot spots if there was a grouping of adjacent sample locations at similar depths with concentrations greater than 100 times the concentrations of the samples in the surrounding area. No hot spots in groundwater were identified.

We identified the following hot spot in soil:

- PCBs in soil on the eastern portion of Lot 2 in the area of W-07E (7,020 ppm at 0-0.5 ft), W-07-GEI (4,903 ppm at 0-3 ft), W-07S (3,650 ppm at 1-2 ft), W-07SE (11,200 ppm 1-2 ft and 124,006 ppm at 2-3 ft), W-07EE (208.9 ppm at 0-0.5 ft).

An elevated concentration of the EPH fraction C₁₉-C₃₆ aliphatics in soil is on the northwest portion of Lot 1 at AS/SB-2 (56,800 ppm at 5-7 ft). A single data point is not a hotspot. When this concentration (SB-2, 56,800 ppm) is averaged with the concentrations detected in four adjacent soil samples (SB-6, 16.4 ppm; SB-7, 26.1 ppm; SB-9, 40.4 ppm; and SB-10, 26.3 ppm) collected at similar depths, the concentration of C₁₉-C₃₆ aliphatics for this discrete area is not 100 times greater than the surrounding area and is not a hot spot. Based on a similar evaluation, the location where the EPH fraction C₁₁-C₂₂ exceeds the UCL (W-07-GEI at a depth of 0 to 3 feet) is not a hot spot.

An elevated concentration of chromium in soil is at SVA-06 (40,000 ppm at 0-1 ft). GEI attempted to confirm chromium concentrations in this area in August 2019. Based on the available sample location information, SVA-06 appeared to be located beneath a substantial soil pile. We collected two soil samples from a location (SVA-06-GEI) near the base of the soil pile at depths of 0-1 ft (67.8 ppm) and 1-2 ft (40.7 ppm). Chromium detected in five adjacent soil samples collected at similar depths to SVA-06 ranged from 40.7 to 185 ppm.

As a result, the concentration of chromium in surface soil for this discrete area is not 100 times greater than the surrounding area and is therefore not identified as a hot spot.

10.4.4 Contaminants of Concern (COCs)

In accordance with the DEP's "Guidance for Disposal Site Risk Characterization," dated July 28, 1995, all chemicals detected at the Site should be considered COCs and should be carried through the risk assessment process unless one of the following conditions is true:

- The chemicals are present at a low frequency of detection and in low concentrations.
- The chemicals are present at levels that are consistent with "background" concentrations for the area and there is no evidence that their presence is related to activities at the Site.
- The chemicals are field or laboratory contaminants.

Except for a limited number of VOCs, all analytes detected in soil and groundwater were considered COCs. COCs in soil include PCBs; EPH fractions and target PAHs; the metals arsenic, barium, cadmium, total chromium, lead, mercury, selenium, silver, and zinc; and several VOCs. Total chromium was evaluated as trivalent chromium because hexavalent chromium was only detected in two of 38 soil samples at concentrations similar to detection limits; therefore, hexavalent chromium is not a soil COC at the Property. COCs in groundwater include some VOCs, PAHs, and the metals arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

The following VOCs detected in soil were excluded as COCs because they were detected at a low frequency and in low concentrations: n-butylbenzene, sec-butylbenzene, tert-butylbenzene, 4-isopropyltoluene, total 1,2-dichloroethene, 2-hexanone, isopropylbenzene, n-propylbenzene, trichlorofluoromethane, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. These VOCs were generally detected in less than 10 percent of soil samples at concentrations similar to or only slightly above detection limits.

The following VOCs detected in groundwater were excluded as COCs because they were detected at a low frequency and in low concentrations: n-propylbenzene, dichlorodifluoromethane, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. These VOCs were only detected once out of nine groundwater samples at relatively low concentrations.

10.5 Exposure Assessment

An exposure assessment under the MCP is the process of identifying the potential for on-site and surrounding area receptors, both human and environmental, to contact chemicals in various media (such as soil and groundwater).

10.5.1 Soil Exposure Point Concentrations

The MCP requires that the determination or estimation of EPCs be representative of actual and foreseeable exposures. The development of EPCs often involves statistical analysis of the data; for example, MassDEP recommends the use of average concentrations when the average concentration is not expected to underestimate potential exposure. Soil EPCs are those concentrations that provide a conservative estimate of the concentrations in soil to which a potential receptor may be exposed.

We calculated the average of all COC concentrations in soil samples representative of current conditions at the Property as described in Section 10.4.1, excluding the PCB hot spot. We calculated a separate PCB EPC for the PCB hot spot. Soil samples used to estimate soil EPCs were collected from depths ranging from 0 to 13 feet. One-half the reporting limit was used in the calculation for results that were not detected above the laboratory reporting limit.

The resulting EPCs for each COC in soil are in Table 18.

A summary of samples included in the PCB hot spot and the resulting PCB EPC for the hot spot is in Table 19.

10.5.2 Groundwater Exposure Concentrations

Groundwater EPCs were conservatively based on the maximum COC concentrations detected in shallow groundwater.

10.6 Comparison of Exposure Point Concentrations to MCP Standards

The MCP states that a condition of NSR of harm to human health, public welfare, and the environment exists if the soil and groundwater EPCs are less than the lowest applicable MCP soil and groundwater standards. Based on current and potential future use, the soil EPCs were compared to the applicable Method 1 S-2/GW-3 and S-3/GW-3 soil standards and groundwater EPCs were compared to the applicable GW-2 and GW-3 groundwater standards. The results of these comparisons show that under current and future use, soil EPCs for benzo(a)pyrene, PCBs, lead, and arsenic exceed applicable Method 1 S-2/GW-3 or S-3/GW-3 soil standards (Table 18). Therefore, a condition of NSR of harm to human health does not exist for exposure to soil under current and potential future use.

The soil EPC for PCBs in the identified PCB hot spot (Section 10.4.3) exceeds the MCP UCL (Table 19).

10.7 Characterization of Risk to Safety

There are several conditions at the Property that potentially pose a risk to public safety, as defined by the MCP (310 CMR 40.0960). These conditions include on Lot 1, the remains of the fire damaged former office building and a fire damaged former residential building. On Lot 2, the former industrial buildings (metal shop/garage and furnace building) in varying states of disrepair.

Although there is a potential risk to public safety, the Property is fenced, gated, and locked to restrict access. Conditions that pose a potential risk to public safety at the Property will be addressed as part of final Site cleanup.

10.8 Method 3 Public Welfare Risk Characterization

The purpose of this assessment is to identify and evaluate nuisance conditions and significant community effects. The characterization of risk to public welfare considers effects that are or may result from the presence of residual contamination or the implementation of a proposed remedial alternative. The risk of harm to public welfare is also characterized by comparing COC concentrations to MCP upper concentration limits (UCLs) for soil and groundwater. The UCLs are levels in soil and groundwater that, if exceeded, indicate the potential for significant risk of harm to the environment and public welfare under future conditions.

There are no nuisance conditions identified for the Site. Based on observations and information collected during environmental investigations, no community near the Site experiences adverse impacts to public welfare under current or anticipated future conditions.

The average COC concentrations in soil across the Property, excluding the PCB hot spot, are below UCLs. The average PCB concentrations in soil at the PCB hot spot exceed the soil UCL. Accordingly, there is a risk of harm to public welfare under future conditions at the Property. Groundwater EPCs at the Property are below UCLs.

10.9 Method 3 Stage I Environmental Screening

We conducted a Stage I Environmental Screening to evaluate risk to biota and habitat from exposure to contaminated media at the Property and identify whether a Stage II Environmental Risk Characterization was required. The Property historically operated as a scrap metal recycling facility; therefore, the Property was completely developed prior to being vacated in 2001. Historic structures, concrete pads, and paved areas are present throughout the Property, including on Lot 1, the remains of a former office building and a former residential building and on Lot 2, the former industrial buildings (metal shop/garage and furnace building) in varying states of disrepair. As a result, the Property is currently a

vacant, industrial lot with paved areas as well as areas colonized by ruderal colonizers (weeds, grasses, shrubs) but not a continuous or complete ecological unit. There are no ongoing releases at the Property. The Property is surrounded by residential and commercial land use with no nearby areas of open land. The Site is not located in an ACEC and there are no Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife or Priority Habitats of Rare Species within 500 feet of the Site. As a result of the developed nature of the Property, the Property does not constitute viable habitat sufficient to support a balanced terrestrial community. Based on this Stage 1 Environmental Screening, we concluded that a Stage II Environmental Risk Characterization is not required because there are no complete exposure pathways to soil and groundwater for wildlife receptors and a condition of NSR of harm to the environment exists at the Property.

The nearest surface water (the Merrimack River) and sediment are about 450 feet east of the Site. There is one Property storm drain catch basin connected to the storm drain system that reportedly discharges to the Merrimack River. Metals, EPH fractions, and PCBs have been detected in river sediments; however, there is uncertainty regarding the source of contamination.

10.10 Risk Characterization Conclusions

The Risk Characterization included classification of Property soil and groundwater for exposure potential; a comparison of the soil and groundwater EPCs for Property COCs to applicable MCP Method 1 standards (S-2/GW-3 and S-3/GW-3 soil standards as well as GW-2 and GW-3 groundwater standards for current and future receptors); a Method 3 evaluation of risk to public welfare; a Method 3 Stage I Environmental Screening; and a separate evaluation of risk of harm to safety.

The conclusions of the combined Method 1 and Method 3 Risk Characterization are as follows:

- The soil EPCs for benzo(a)pyrene, PCBs, lead, and arsenic exceed applicable Method 1 S-2/GW-3 or S-3/GW-3 soil standards are above the applicable MCP Method 1 soil standards for current and future receptors, including a trespasser and utility worker under current land use and commercial workers, residents, construction workers, and the general public under future land use. Therefore, the Property poses risk to human health for a current and future receptor.
- The Property poses risk of harm to public welfare under future conditions because average PCB concentrations at the PCB hot spot exceed the soil UCL.
- There is a condition of NSR of harm to the environment at the Property. Risk of harm to environmental receptors in the Merrimack River has not been fully evaluated.

- Conditions at the Property pose a potential risk of harm to public safety; however, the Property is fenced, gated, and locked to restrict access and conditions that pose a potential risk to public safety at the Property will be addressed as part of final Site cleanup.

11. Findings and Conclusions

This Phase II CSA meets the requirements presented in the MCP for a Phase II CSA (310 CMR 40.0830), including a Risk Characterization (310 CMR 40.0900). This report addresses the release of contaminants to the environment associated with the former operation of the Property as a scrap metals recycling facility. The findings and conclusions of the Phase II CSA and Risk Characterization are:

11.1 Phase II CSA

- The Site includes the 207 Marston Street property in Lawrence, Massachusetts (the Property), a portion of a MassDOT easement east of the Property, and portions of residential properties that abut the Property to the north.
- Contamination in Site soil includes PCBs, VOCs, petroleum hydrocarbons, PAHs, and metals.
- Contamination in Site groundwater includes VOCs, PAHs, and metals.
- The source of Site contamination is the historic operation of the Property as a scrap metals recycling yard. There are no ongoing releases.
- The horizontal extent of Site contamination has been determined by diminishing concentrations of contaminants in soil and groundwater.
- The vertical extent of Site contamination is limited to fill.
- Site contaminants, including PCBs, metals, and EPH fractions, have been detected in sediments in the Merrimack River. However, it has not been confirmed if Site contamination is the source of contamination in the Merrimack River.

11.2 Risk Characterization

Human Health Risk Characterization

- GEI assumed an AUL will be implemented at the Property to restrict future single-family residential use of the Property.
- Based on the results of a Method 1 Risk Characterization, conditions at the Property pose a significant risk of harm to human health for current and future human receptors.

Safety Risk Characterization

- Based on observations and information collected during environmental investigations, conditions at the Property pose a potential risk of harm to public safety; however, the Property is fenced, gated, and locked to restrict access and conditions that pose a potential risk to public safety at the Property will be addressed as part of final Site cleanup.

Public Welfare

- Based on observations and information collected during environmental investigations, no community near the Property experiences adverse impacts to public welfare under current or anticipated future conditions. However, average concentrations of PCBs at a PCB hot spot exceed the applicable soil UCL. Therefore, conditions at the Property pose a risk of harm to public welfare under future conditions.

Stage I Environmental Screening

- The Property is currently a vacant, industrial lot with historic structures, concrete pads, and paved areas present throughout the Property. The Property is surrounded by residential and commercial land use with no nearby areas of open land. There are no species of concern, threatened species, or endangered species at the Property. The Property contains no surface water bodies or wetlands.
- As a result of the developed nature of the Property, the Property does not constitute viable habitat sufficient to support a balanced terrestrial community. Based on a Stage I Environmental Screening, we concluded that a Stage II Environmental Risk Characterization is not required because there are no complete exposure pathways to soil and groundwater for wildlife receptors and a condition of NSR of harm to the environment exists at the Property.
- Risk of harm to environmental receptors in the Merrimack River has not been fully evaluated.

11.3 Revised Tier Classification

With the installation and maintenance of a fence at the Site perimeter, there is no longer an Imminent Hazard and the Site does not meet any of the Tier I Criteria. Therefore, the Site is being reclassified as a Tier II Site.

12. Limitations

This report was prepared for the use of the City of Lawrence, exclusively. The findings provided by GEI in this report are based solely on the information provided in this report. Information that was not available to GEI for this report, or variations from the conditions reported by others, may result in a modification of the findings stated above. This report has been prepared in accordance with generally accepted hydrogeological and engineering practices. No warranty, expressed or implied, is made.

13. References

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MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Tables

Table 1. Well Construction Summary
Former Tombarello Site
Lawrence, Massachusetts

Well ID	Date Installed	Installed by	Elevation (ft) ^{Note 6}	Diameter (in)	Depth (ft)	Screen Depth Interval (ft)	Screened Strata
MW-1(WZB)	7/8/1998	WZB	NM	2	13	NA	NA
MW-1(Weston)	2/1/2003	Weston	35.21	1.5	13.1	3-13	NA
MW-2/2A ^(Note 8)	7/8/1998	WZB	NM	2	10	NA	NA
MW-3/3A ^(Note 8)	7/8/1998	WZB	NM	2	15	NA	NA
MW-4	7/8/1998	WZB	NM	2	14	NA	NA
SB5/MW-5	6/1/1999	HEA	NM	NA	NA	5-15	Sand
SB6/MW-6	6/1/1999	HEA	NM	NA	NA	5-15	Sand
SB7/MW-7	6/1/1999	HEA	NM	NA	NA	5-15	Sandy Fill
MW-5	2/1/2003	Weston	NM	1.5	NA	NA	NA
MW-6	2/1/2003	Weston	NM	1.5	NA	NA	NA
MW-7	2/1/2003	Weston	NM	1.5	NA	NA	NA
MW-8	6/9/2016	Nobis	35.74	2	13	3-13	Fill, Native Sand
MW-9	6/9/2016	Nobis	35.62	2	13	3-13	Fill, Native Sand
MW-10	6/8/2016	Nobis	35.62	2	12	2-12	NA
MW-11(BPA-02)	6/7/2016	Nobis	33.39	2	12	3-13	Fill, Native Silty Sand, Native Sand
MW-12(FB-04)	6/6/2016	Nobis	33.37	2	13	3-13	Fill, Native Sand
MW-13(FB-01)	6/6/2016	Nobis	33.09	2	13	3-13	Fill, Native Sand
MW-14(MS-01)	6/10/2016	Nobis	38.22	2	13	3-13	Fill, Native Sand and Gravel
MW-15(NPA-02)	6/10/2016	Nobis	35.27	2	13	3-13	Fill, Native Sand
MW-16	6/9/2016	Nobis	33.98	2	13	5-15	Native Sand, Glacial Till, Weathered Bedrock

Notes:

1. ft = feet
2. in = inches
3. W.Z.B. = W.Z. Baumgartner and Associates, Inc.
4. NA = Information Not Available
5. NM = Not Measured
6. Elevations were measured from the top of PVC. Elevations shown are based on a survey conducted by Nobis on June 16, 2016 using an arbitrary benchmark of 100 feet. The benchmark used was not identified. Although W.Z.B. also surveyed the monitoring wells it installed, it used a different benchmark. Therefore, elevations measured by W.Z.B. are not shown here.
7. Boring and monitoring well logs for the wells installed by Weston in February 2003 were not available.
8. Wells MW2A and MW3A were installed adjacent to MW2 and MW3, respectively, due to low water volume in MW2 and MW3. Only logs for MW2 and NW3 were available. Well construction for MW2A and MW3A are assumed to be consisted with MW2 and MW3.

Table 2. Monitoring Well Gauging Data
Former Tombarello Site
Lawrence, Massachusetts

ID	Date	Gauged By	Measuring Point	Measuring Point Elevation (ft)	Depth to Bottom (ft)	Depth to Water (ft)	Groundwater Elevation (ft)
MW-1(WZB)	7/9/1998	WZB	Top of Well	NM	12.5	5.12	NM
MW-2	7/9/1998	WZB	Top of Well	NM	8.79	6.91	NM
MW-3A	7/30/1998	WZB	Top of Well	NM	19.17	9.88	NM
MW-4	7/9/1998	WZB	Top of Well	NM	14.35	11.17	NM
MW-1(Weston)	6/17/2016	Nobis	Top of PVC	35.21	13.1	9.15	26.06
MW-8	6/17/2016	Nobis	Top of PVC	35.74	12.55	11.25	24.49
MW-9	6/17/2016	Nobis	Top of PVC	35.62	12.85	12.11	23.51
MW-10	6/17/2016	Nobis	Top of PVC	35.62	14.3	Dry	---
MW-11(BPA-02)	6/17/2016	Nobis	Top of PVC	33.39	12.51	9.86	23.53
MW-12(FB-04)	6/17/2016	Nobis	Top of PVC	33.37	12.02	8.11	25.26
MW-13(FB-01)	6/17/2016	Nobis	Top of PVC	33.09	12.55	7.14	25.95
MW-14(MS-01)	6/17/2016	Nobis	Top of PVC	38.22	---	Dry	---
MW-15(NPA-02)	6/17/2016	Nobis	Top of PVC	35.27	12.84	7.25	28.02
MW-16	6/17/2016	Nobis	Top of PVC	33.98	14.55	10.73	23.25

Notes:

1. ft = feet
2. in = inches
3. WZB = W.Z. Baumgartner and Associates, Inc.
4. NA = Information Not Available
5. NM = Not Measured
6. Elevations were measured from the top of PVC. Elevations shown are based on a survey conducted by Nobis on June 16, 2016 using an arbitrary benchmark of 100 feet. The benchmark used was not identified. Although W.Z.B. also surveyed the monitoring wells it installed, it used a different benchmark. Therefore, elevations measured by W.Z.B. are not shown here.
7. Boring and monitoring well logs for the wells installed by Weston in February 2003 were not available.
8. Wells MW2A and MW3A were installed adjacent to MW2 and MW3, respectively, due to low water volume in MW2 and MW3. Only logs for MW2 and MW3 were available. Well construction for MW2A and MW3A are assumed to be consisted with MW2 and MW3.

Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	Location Name	AB13	AB13	AB35	AB35	BC13	BC13	BC35	BC35	CD13	CD13	CD35	CD35	DE13	DE13	DE35	DE35	EF13	EF13
					Sample Name	AB13 (0-1')	AB13 (1-3')	AB35 (0-1')	AB35 (1-3')	BC13 (0-1')	BC13 (1-3')	BC35 (0-1')	BC35 (1-3')	CD13 (0-1')	CD13 (1-3')	CD35 (0-1')	CD35 (1-3')	DE13 (0-1')	DE13 (1-3')	DE35 (0-1')	DE35 (1-3')	EF13 (0-1')	EF13 (1-3')
					Start Depth	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
					End Depth	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	
EPH Fractions	MA EPH	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
C9-C18 Aliphatics			EPH918	20000																			
C11-C22 Aromatics			EPH1122	10000																			
C19-C36 Aliphatics			EPH1936	20000																			
Polychlorinated Biphenyls (PCBs)		mg/kg																					
Total PCB Aroclors	8082		1336-36-3	100	1.1	< 0.6	17.2	< 0.7	10.2	1.2	3.9	< 0.7	22.1	< 0.6	4.6	200	45	< 0.6	3.4	< 0.6	11	< 0.6	
Metals		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Arsenic	6010		7440-38-2	500																			
Barium	6010		7440-39-3	10000																			
Cadmium	6010		7440-43-9	1000																			
Chromium	6010		7440-47-3	2000																			
Lead	6010		7439-92-1	6000																			
Mercury	7471		7439-97-6	300																			
Selenium	6010		7782-49-2	7000																			
Silver	6010		7440-22-4	2000																			

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. EPH = Extractable Petroleum Hydrocarbon
9. mg/kg = milligrams/kilogram or parts per million (ppm)
10. Soil samples collected and tested for PCBs in July and September 2003 were first extracted by Method 3540C (manual soxhlet extraction).
11. Extraction method for soil samples collected and tested for PCBs in February 2003 and May 2005 is unknown.
12. Bolding indicates a detected result concentration
13. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.
14. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	EF35	EF35	FG13	FG13	FG35	FG35	GH24	GH24	GH46	GH46	HI24	HI24	HI46	HI46	IJ24	IJ24	IJ46	IJ46
					EF35 (0-1')	EF35 (1-3')	FG13 (0-1')	FG13 (1-3')	FG35 (0-1')	FG35 (1-3')	GH24 (0-1')	GH24 (1-3')	GH46 (0-1')	GH46 (1-3')	HI24 (0-1')	HI24 (1-3')	HI46 (0-1')	HI46 (1-3')	IJ24 (0-1')	IJ24 (1-3')	IJ46 (0-1')	IJ46 (1-3')
EPH Fractions	MA EPH	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000																		
C11-C22 Aromatics			EPH1122	10000																		
C19-C36 Aliphatics			EPH1936	20000																		
Polychlorinated Biphenyls (PCBs)		mg/kg																				
Total PCB Aroclors	8082		1336-36-3	100	20	7.8	38	< 0.6	66	38	3.7	< 0.6	28	< 0.5	2.8	< 0.6	11.4	1.5	18.1	< 0.6	15.2	< 0.6
Metals		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500																		
Barium	6010		7440-39-3	10000																		
Cadmium	6010		7440-43-9	1000																		
Chromium	6010		7440-47-3	2000																		
Lead	6010		7439-92-1	6000																		
Mercury	7471		7439-97-6	300																		
Selenium	6010		7782-49-2	7000																		
Silver	6010		7440-22-4	2000																		

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. EPH = Extractable Petroleum Hydrocarbon
9. mg/kg = milligrams/kilogram or parts per million (ppm)
10. Soil samples collected and tested for PCBs in July and September 2003 were first extracted by Method 3540C (manual soxhlet extraction).
11. Extraction method for soil samples collected and tested for PCBs in February 2003 and May 2005 is unknown.
12. Bolding indicates a detected result concentration
13. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.
14. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	Location Name	JK24	JK24	JK46	JK46	KL24	KL24	LM24	LM24	WSB-1	WSB-1	WSB-2	WSB-2	WSB-3	WSB-3	WSB-4	WSB-4	WSB-5	WSB-5
					Sample Name	JK24 (0-1')	JK24 (1-3')	JK46 (0-1')	JK46 (1-3')	KL24 (0-1')	KL24 (1-3')	LM24 (0-1')	LM24 (1-3')	WSB-1 (1-3')	WSB-1 (3-5')	WSB-2 (1-3')	WSB-2 (3-5')	WSB-3 (0-1')	WSB-3 (1-3')	WSB-4 (0-1')	WSB-4 (1-3')	WSB-5 (0-1')	WSB-5 (1-3')
					Start Depth	0	1	0	1	0	1	0	1	1	3	1	3	0	1	0	1	0	1
					End Depth	1	3	1	3	1	3	1	3	3	5	3	5	1	3	1	3	1	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003
EPH Fractions	MA EPH	mg/kg				NT	NT	NT	NT	NT	NT	NT	NT										
C9-C18 Aliphatics			EPH918	20000										< 27.1	< 31.4	369	< 619	< 29.2	< 138	< 27.5	< 30.9	< 90.1	< 164
C11-C22 Aromatics			EPH1122	10000										375	< 31.4	983	1670	182	1140	150	< 30.9	968	272
C19-C36 Aliphatics			EPH1936	20000										123	< 31.4	1650	7300	545	497	399	< 30.9	345	812
Polychlorinated Biphenyls (PCBs)		mg/kg																					
Total PCB Aroclors	8082		1336-36-3	100		7	< 3.5	37.8	4	4.9	5.9	25.7	< 0.6	1.6	0.05	26.4	< 0.05	0.27	21.8	9.8	0.25	1.9	7
Metals		mg/kg				NT	NT	NT	NT	NT	NT	NT	NT										
Arsenic	6010		7440-38-2	500										6.1	5.88	7.42	11	5.49	6.75	8.97	15.6	13.6	14.2
Barium	6010		7440-39-3	10000										106	64	107	166	74.4	142	156	52.9	344	867
Cadmium	6010		7440-43-9	1000										4.01	< 0.796	716	20	1.82	3.86	2.88	< 0.796	3.75	5.77
Chromium	6010		7440-47-3	2000										23.2	12.4	34.4	220	27.5	30.7	29.1	15.5	40	52.2
Lead	6010		7439-92-1	6000										1180	159	1330	168	389	563	381	30.2	2700	1260
Mercury	7471		7439-97-6	300										2.71	0.145	1.17	< 0.367	3.07	2.42	0.912	< 0.0392	1.07	< 1.86
Selenium	6010		7782-49-2	7000										< 7.1	< 7.96	< 6.89	< 10.7	< 7.94	< 7.12	< 6.87	< 7.96	< 7.48	< 8.66
Silver	6010		7440-22-4	2000										< 0.71	< 0.796	< 0.689	< 1.07	< 0.794	< 0.712	< 0.687	< 0.796	< 0.748	< 0.866

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Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	Location Name	WSB-6	WSB-6	WSB-7	WSB-7	WSB-8	WSB-8	WSB-9	WSB-9	WSB-10	WSB-10	WSB-11	WSB-11	WSB-12	WSB-12	WSB-14	WSB-14	WSB-14	WSB-14
					Sample Name	WSB-6 (0-1')	WSB-6 (1-3')	WSB-7 (0-1')	WSB-7 (1-3')	WSB-8 (1-3')	WSB-8 (3-5')	WSB-9 (0-1')	WSB-9 (1-3')	WSB-10 (0-1')	WSB-10 (1-3')	WSB-11 (0-1')	WSB-11 (1-3')	WSB-12 (0-1')	WSB-12 (1-3')	WSB-14 (0-1')	WSB-14 (1-3')	WSB-14 (3-5')	WSB-14 (5-7')
					Start Depth	0	1	0	1	1	3	0	1	0	1	0	1	0	1	0	1	3	5
					End Depth	1	3	1	3	3	5	1	3	1	3	1	3	1	3	1	3	5	7
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003	2/12/2003
EPH Fractions																							
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000		< 28.4	< 32.1	< 27.9	< 27.5	< 133	45	< 31.6	< 32.4	< 137	63.5	< 0.352	< 144	< 142	< 30.1	< 28.2	1750	< 30.6	< 30.9
C11-C22 Aromatics			EPH1122	10000		527	< 32.1	136	63.9	240	255	< 31.6	< 32.4	70.6	214	739	649	156	< 30.1	72.1	1955	< 30.6	< 30.9
C19-C36 Aliphatics			EPH1936	20000		812	< 32.1	562	126	219	826	104	< 32.4	2310	557	361	918	396	< 30.1	250	6980	77.6	< 30.9
Polychlorinated Biphenyls (PCBs)																							
Total PCB Aroclors	8082	mg/kg	1336-36-3	100		2700	34	0.8	7.1	7.3	< 0.04	0.36	0.04	4.8	26	0.45	4.5	7.1	0.09	0.15	7.85	< 0.04	< 0.04
Metals																							
Arsenic	6010	mg/kg	7440-38-2	500		17.9	8.52	9.89	6.13	4.49	8.1	7.33	5.56	69.4	10.8	6.04	14.3	8.51	< 3.91	< 3.69	14.05	10.7	4.66
Barium	6010		7440-39-3	10000		55.8	19.4	70.6	197	35.3	184	228	18.9	195	526	82.3	176	376	46.6	45.8	765	1480	18.1
Cadmium	6010		7440-43-9	1000		1.61	< 0.801	2.3	3.07	< 0.669	3.55	1.42	< 0.866	0.977	4.1	1.68	12.5	10.6	< 0.782	2.11	6.245	< 0.808	< 0.786
Chromium	6010		7440-47-3	2000		29.6	12.6	48.6	28.9	15.5	35.5	20.6	12.6	40.1	47	28.7	57.9	40.7	10.1	24.6	52.15	15.1	8.34
Lead	6010		7439-92-1	6000		92.2	< 8.01	215	517	464	94.9	789	< 8.66	1320	216	709	652	13.7	115	1240	2230	< 7.86	
Mercury	7471		7439-97-6	300		0.327	< 0.0414	1.39	0.535	0.401	1.29	0.174	< 0.0433	0.323	2.08	0.661	2.26	0.751	< 0.0382	1.28	1.41	0.28	< 0.0398
Selenium	6010		7782-49-2	7000		< 6.89	< 8.01	< 7.12	< 7.2	< 6.69	< 7.58	< 8.38	< 8.66	< 7.18	< 7.41	< 7.51	< 7.51	< 7.33	< 7.82	< 7.38	< 7.7	< 8.08	< 7.86
Silver	6010		7440-22-4	2000		< 0.689	< 0.801	< 0.712	< 1.62	< 0.669	< 0.758	< 0.838	< 0.866	< 0.718	< 0.741	< 0.751	< 0.751	< 0.733	< 0.782	< 0.738	0.99	< 0.808	< 0.786

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Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	Location Name	WSB-16	WSB-16	WSB-16	WSB-17	WSB-17	WSB-17	WSB-17	WSB-18	WSB-18	WSB-18	WSB-21	WSB-21	WSB-21	WSB-22	WSB-22	WSB-22	WSB-25	WSB-25
					Sample Name	WSB-16 (0-1')	WSB-16 (1-2')	WSB-16 (2-3')	WSB-17 (0-1')	WSB-17 (0-1') DUP	WSB-17 (1-2')	WSB-17 (2-3')	WSB-18 (0-1')	WSB-18 (1-2')	WSB-18 (2-3')	WSB-21 (0-1')	WSB-21 (1-2')	WSB-21 (2-3')	WSB-22 (0-1')	WSB-22 (1-2')	WSB-22 (2-3')	WSB-25 (0-1')	WSB-25 (1-2')
					Start Depth	0	1	2	0	0	1	2	0	1	2	0	1	2	0	1	2	0	1
					End Depth	1	2	3	1	1	2	3	1	2	3	1	2	3	1	2	3	1	2
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/14/2003	7/14/2003	7/15/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	
EPH Fractions	MA EPH	mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000																			
C11-C22 Aromatics			EPH1122	10000																			
C19-C36 Aliphatics			EPH1936	20000																			
Polychlorinated Biphenyls (PCBs)		mg/kg																					
Total PCB Aroclors	8082		1336-36-3	100		3.1	< 0.5	< 0.6	2.5	3.7	< 0.6	< 0.6	1.7	< 0.6	< 0.6	18.2	< 0.6	< 0.6	17	< 0.6	< 0.6	14.9	< 0.6
Metals		mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500																			
Barium	6010		7440-39-3	10000																			
Cadmium	6010		7440-43-9	1000																			
Chromium	6010		7440-47-3	2000																			
Lead	6010		7439-92-1	6000																			
Mercury	7471		7439-97-6	300																			
Selenium	6010		7782-49-2	7000																			
Silver	6010		7440-22-4	2000																			

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Former Tombarello Site
Lawrence, Massachusetts

Location Name				WSB-25	WSB-26	WSB-26	WSB-26	WSB-26	WSB-26	WSB-27	WSB-27	WSB-27	WSB-27	WSB-27	WSB-30	WSB-30	WSB-30	WSB-30	WSB-30	WSB-31	WSB-31	WSB-31	WSB-31	WSB-31	WSB-31	WSB-32	WSB-32	WSB-32	WSB-32	WSB-32	WSB-35
Sample Name				WSB-25 (2-3')	WSB-26 (0-1')	WSB-26 (0-1') DUP	WSB-26 (1-2')	WSB-26 (2-3')	WSB-27 (0-1')	WSB-27 (1-2')	WSB-27 (2-3')	WSB-30 (0-1')	WSB-30 (1-2')	WSB-30 (2-3')	WSB-31 (0-1')	WSB-31 (1-2')	WSB-31 (2-3')	WSB-32 (0-1')	WSB-32 (1-2')	WSB-32 (2-3')	WSB-35-1										
Start Depth				2	0	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	0	1	2	0	1	2	1	2	0	
End Depth				3	1	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	1	2	3	1	2	3	2	3	1	
Depth Unit				ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
Sample Date				7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	7/14/2003	9/2/2003	
Parent Sample																															
MCP UCL																															
Analyte	Method	Units	CAS No.																												
EPH Fractions	MA EPH	mg/kg		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
C9-C18 Aliphatics			EPH918	20000																											
C11-C22 Aromatics			EPH1122	10000																											
C19-C36 Aliphatics			EPH1936	20000																											
Polychlorinated Biphenyls (PCBs)		mg/kg																													
Total PCB Aroclors	8082		1336-36-3	100	< 0.6	39	50	510	7.1	24	< 0.6	< 0.6	< 20	< 20	< 0.6	13000	2.7	< 0.6	< 3	< 3	< 0.6	38									
Metals		mg/kg		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
Arsenic	6010		7440-38-2	500																											
Barium	6010		7440-39-3	10000																											
Cadmium	6010		7440-43-9	1000																											
Chromium	6010		7440-47-3	2000																											
Lead	6010		7439-92-1	6000																											
Mercury	7471		7439-97-6	300																											
Selenium	6010		7782-49-2	7000																											
Silver	6010		7440-22-4	2000																											

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Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	Location Name	WSB-35	WSB-35	WSB-41	WSB-41	WSB-41	WSB-45	WSB-45	WSB-45	WSB-50	WSB-50	WSB-50	WSB-56	WSB-56	WSB-56	WSB-61	WSB-61	WSB-61	WSB-65
					Sample Name	WSB35-2	WSB35-3	WSB41-1	WSB41-2	WSB41-3	WSB45-1	WSB45-2	WSB45-3	WSB50-1	WSB50-2	WSB50-3	WSB56-1	WSB56-2	WSB56-3	WSB61-1	WSB61-2	WSB61-3	WSB65-1
					Start Depth	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0
					End Depth	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003
EPH Fractions	MA EPH	mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000																			
C11-C22 Aromatics			EPH1122	10000																			
C19-C36 Aliphatics			EPH1936	20000																			
Polychlorinated Biphenyls (PCBs)		mg/kg																					
Total PCB Aroclors	8082		1336-36-3	100		1.9	< 0.6	16.3	41	< 0.5	16	< 0.6	71	< 0.8	39	< 0.5	3.5	7.9	31	< 0.6	< 0.6	25	
Metals		mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500																			
Barium	6010		7440-39-3	10000																			
Cadmium	6010		7440-43-9	1000																			
Chromium	6010		7440-47-3	2000																			
Lead	6010		7439-92-1	6000																			
Mercury	7471		7439-97-6	300																			
Selenium	6010		7782-49-2	7000																			
Silver	6010		7440-22-4	2000																			

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Former Tombarello Site
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Analyte	Method	Units	CAS No.	MCP UCL	Location Name	WSB-65	WSB-65	WSB-70	WSB-70	WSB-70	WSB-73	WSB-73	WSB-73	WSB-76	WSB-76	WSB-77	WSB-77	WSB-77	WSB-78	WSB-78	WSB-79		
					Sample Name	WSB65-2	WSB65-3	WSB70-1	WSB70-2	WSB70-3	WSB73-1	WSB73-2	WSB73-3	WSB73-4	WSB76-1	WSB76-3	WSB77-1	WSB77-2	WSB77-3	WSB77-4	WSB78-1	WSB78-3	WSB79-1
					Start Depth	1	2	0	1	2	0	1	2	0	2	0	1	2	0	2	0		
					End Depth	2	3	1	2	3	1	2	3	1	3	1	2	3	1	3	1		
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft		
					Sample Date	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003		
EPH Fractions	MA EPH	mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
C9-C18 Aliphatics			EPH918	20000																			
C11-C22 Aromatics			EPH1122	10000																			
C19-C36 Aliphatics			EPH1936	20000																			
Polychlorinated Biphenyls (PCBs)		mg/kg																					
Total PCB Aroclors	8082		1336-36-3	100		< 0.6	< 0.6	< 0.5	< 0.5	< 0.7	3.5	22	< 0.5	< 0.5	1.7	1.7	2.2	37	120	8.4	15.6	14	10
Metals		mg/kg				NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
Arsenic	6010		7440-38-2	500																			
Barium	6010		7440-39-3	10000																			
Cadmium	6010		7440-43-9	1000																			
Chromium	6010		7440-47-3	2000																			
Lead	6010		7439-92-1	6000																			
Mercury	7471		7439-97-6	300																			
Selenium	6010		7782-49-2	7000																			
Silver	6010		7440-22-4	2000																			

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. EPH = Extractable Petroleum Hydrocarbon
9. mg/kg = milligrams/kilogram or parts per million (ppm)
10. Soil samples collected and tested for PCBs in July and September 2003 were first extracted by Method 3540C (manual soxhlet extraction).
11. Extraction method for soil samples collected and tested for PCBs in February 2003 and May 2005 is unknown.
12. Bolding indicates a detected result concentration
13. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.
14. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Table 3. Soil Chemical Testing Results - Weston Phase II CSA (2003-2005)
Former Tombarello Site
Lawrence, Massachusetts

				Location Name	WSB-79	WSB-80	WSB-80	WSB-80	WSB-81	WSB-81	WSB-81	WSB-82	WSB-82	WSB-82
				Sample Name	WSB79-3	WSB80-1	WSB80-2	WSB80-3	WSB-81 (0-0.5)	WSB-81 (1-2')	WSB-81 (2-3')	WSB-82 (0-0.5')	WSB-82 (1-2')	WSB-82 (2-3')
				Start Depth	2	0	1	2	0	1	2	0	1	2
				End Depth	3	1	2	3	0.5	2	3	0.5	2	3
				Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
				Sample Date	9/2/2003	9/2/2003	9/2/2003	9/2/2003	5/2/2005	5/3/2005	5/4/2005	5/2/2005	5/2/2005	5/2/2005
Analyte	Method	Units	CAS No.	MCP UCL										
EPH Fractions														
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C11-C22 Aromatics			EPH1122	10000										
C19-C36 Aliphatics			EPH1936	20000										
Polychlorinated Biphenyls (PCBs)														
Total PCB Aroclors	8082	mg/kg	1336-36-3	100	22	8.3	20.1	62	0.73	6.91	2.95	1.71	0.376	0.651
Metals														
Arsenic	6010	mg/kg	7440-38-2	500	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	6010		7440-39-3	10000										
Cadmium	6010		7440-43-9	1000										
Chromium	6010		7440-47-3	2000										
Lead	6010		7439-92-1	6000										
Mercury	7471		7439-97-6	300										
Selenium	6010		7782-49-2	7000										
Silver	6010		7440-22-4	2000										

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. EPH = Extractable Petroleum Hydrocarbon
9. mg/kg = milligrams/kilogram or parts per million (ppm)
10. Soil samples collected and tested for PCBs in July and September 2003 were first extracted by Method 3540C (manual soxhlet extraction).
11. Extraction method for soil samples collected and tested for PCBs in February 2003 and May 2005 is unknown.
12. Bolding indicates a detected result concentration
13. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.
14. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					BPA-01	BPA-01	BPA-02	BPA-02	BPA-02	CD-34	CD-34	CD-34E	CD-34E	CD-34N	CD-34N	CD-34S	CD-34S	CD-34S	CD-34W	CD-34W	CD-45	CD-45	CD-45E	CD-45E	CD-45N
Sample Name					BPA-01-0102	BPA-01-0203	BPA-02-0102	BPA-02-0203	BPA-02-0607	CD-34-0304	CD-34-0708	CD-34E-0001	CD-34E-0103	CD-34N-0001	CD-34N-0103	CD-34S-0001	CD-34S-0103	CD-34S-FD-01	CD-34W-0001	CD-34W-0103	CD-45-0304	CD-45-0708	CD-45E-0001	CD-45E-0103	CD-45N-0001
Start Depth					1	2	1	2	6	3	7	0	1	0	1	0	1	1	0	1	3	7	0	1	0
End Depth					2	3	2	3	7	4	8	1	3	1	3	1	3	3	1	3	4	8	1	3	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016
Parent Sample																		CD-34S-0103							
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals		mg/kg								NT	NT	NT	NT	NT			NT	NT	NT	NT			NT	NT	
Arsenic	6010		7440-38-2	500	7.6	8.1	13	6.9	7						20	5.5					11	6.2		20	
Barium	6010		7440-39-3	10000	22	150	970	310	23						140	50					170	25		1700	
Cadmium	6010		7440-43-9	1000	8.8	2.6	22	7	< 0.24						0.97	1.1					11	< 0.23		37	
Chromium	6010		7440-47-3	2000	25	33	99	32	11						38	100					55	13		110	
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT	NT	NT						NT	NT					NT	NT		NT	
Lead	6010		7439-92-1	6000	18	240	5300	590	5.7						650	280					3700	5		6400	
Mercury	7471		7439-97-6	300	0.013 J	0.42	2.8	0.88	< 0.05						0.34	0.18					0.73	0.008 J		6.5	
Selenium	6010		7782-49-2	7000	1.4	2.1	5.4	3.5	2.8						3.2	1.2					4	1.1 J		< 1.6	
Silver	6010		7440-22-4	2000	0.21 J	0.27 J	3.7	1.3	< 1.5						0.39 J	0.42 J					1.4 J	< 1.4		3	
TCLP Metals	1311	mg/L			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Chromium			7440-47-3	NA																					
Lead			7439-92-1	NA																				95	
Cyanides		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Physiologically Available Cyanide	9012B		PACN	NE																					
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					CD-45N	CD-45S	CD-45S	CD-45S	CD-45W	CD-45W	D-5	D-5	D-5	D-5E	D-5E	D-5N	D-5N	FB-01	FB-01	FB-01	FB-02	FB-02	FB-03	FB-03	FB-04
Sample Name					CD-45N-0103	CD-45S-0001	CD-45S-0103	FD-02	CD-45W-0001	CD-45W-0103	D-5-0002	D-5-0203	D-5-0607	D-5E-0001	D-5E-0103	D-5N-0001	D-5N-0103	FB-01-0102	FB-01-0203	FB-01-0507	FB-02-0102	FB-02-0203	FB-03-0102	FB-03-0203	FB-04-0102
Start Depth					1	0	1	1	0	1	0	2	6	0	1	0	1	1	2	5	1	2	1	2	1
End Depth					3	1	3	3	1	3	2	3	7	1	3	1	3	2	3	7	2	3	2	3	2
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/6/2016	6/7/2016	6/7/2016	6/6/2016	6/6/2016	6/6/2016
Parent Sample					CD-45S-0103																				
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals					mg/kg																				
Arsenic	6010		7440-38-2	500																					
Barium	6010		7440-39-3	10000																					
Cadmium	6010		7440-43-9	1000																					
Chromium	6010		7440-47-3	2000																					
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000																					
Lead	6010		7439-92-1	6000																					
Mercury	7471		7439-97-6	300																					
Selenium	6010		7782-49-2	7000																					
Silver	6010		7440-22-4	2000																					
TCLP Metals					mg/L																				
Chromium			7440-47-3	NA																					
Lead			7439-92-1	NA																					
Cyanides					mg/kg																				
Physiologically Available Cyanide	9012B		PACN	NE																					
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					FB-04	FB-04	FB-04	FG-34	FG-34	FG-34N	FG-34N	FG-34S	FG-34S	FG-34W	FG-34W	FG-45E	FG-45E	FG-45E	FG-45N	FG-45N	FG-45S	FG-45S	FG-45S	FG-45W	FG-45W	
Sample Name					FB-04-0203	FB-04-0507	FD-03	FG-34-0001	FG-34-0103	FG-34N-0001	FG-34N-0103	FG-34S-0001	FG-34S-0103	FG-34W-0001	FG-34W-0103	FG-45E-0001	FD-05	FG-45E-0103	FG-45N-0001	FG-45N-0103	FG-45S-0001	FG-45S-0103	FG-45S-0103	FG-45S-0103	FG-45W-0001	FG-45W-0103
Start Depth					2	5	5	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	1	1	0	1
End Depth					3	7	7	1	3	1	3	1	3	1	3	1	1	3	1	3	1	3	3	3	1	3
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/6/2016	6/6/2016	6/6/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016
Parent Sample							FB-04-0507																			
Analyte	Method	Units	CAS No.	MCP UCLs																						
Metals		mg/kg						NT	NT	NT	NT		NT	NT		NT	NT		NT	NT	NT	NT	NT	NT	NT	
Arsenic	6010		7440-38-2	500	6.9	7.5	7.2					14			10			5.2							9.4	
Barium	6010		7440-39-3	10000	52	74	62					140			250			20							99	
Cadmium	6010		7440-43-9	1000	0.36	0.8	0.56					2.7			6.4			< 0.23							2	
Chromium	6010		7440-47-3	2000	29	26	38					91			51			12							37	
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT					NT			NT			NT							NT	
Lead	6010		7439-92-1	6000	35	110	130					720			1000			12							310	
Mercury	7471		7439-97-6	300	0.027 J	0.088	0.15					1.2			0.44			0.015 J							0.49	
Selenium	6010		7782-49-2	7000	< 1.3	1.2	1.3 J					3.2			4.7			2.7							3.7	
Silver	6010		7440-22-4	2000	0.13 J	0.24 J	0.33 J					0.9 J			0.95 J			0.12 J							1.6	
TCLP Metals	1311	mg/L			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Chromium			7440-47-3	NA																						
Lead			7439-92-1	NA																						
Cyanides		mg/kg						NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Physiologically Available Cyanide	9012B		PACN	NE	< 1.13	< 1.24	< 1.26																			
Total Cyanide	9102B		57-12-5	5000	< 0.571	< 0.539	< 0.555																			

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					G3	G3	G3	G-3E	G-3E	G-3N	G-3N	G-3S	G-3S	G-3W	G-3W	HA-01	HA-01	HA-02	HA-03	HA-04	HA-05	HA-06	HA-07	HA-07	HA-08	
Sample Name					G-3-0102	G-3-0203	G-3-0506	G-3E-0002	G-3E-0203	G-3N-0001	G-3N-0203	G-3S-0001	G-3S-0203	G-3W-0001	G-3W-0203	HA-01-0001	FD-08	HA-02-0001	HA-03-0001	HA-04-0001	HA-05-0001	HA-06-0001	HA-07-0001	FD-09	HA-08-0001	
Start Depth					1	2	5	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
End Depth					2	3	6	2	3	1	3	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016
Parent Sample																										
Analyte	Method	Units	CAS No.	MCP UCLs																						
Metals		mg/kg			NT	NT	NT	NT	NT		NT	NT		NT	NT											
Arsenic	6010		7440-38-2	500						10			10 J		40 J	16 J	17	11	13	17	27	16	18	11		
Barium	6010		7440-39-3	10000						220			320 J		480	480	450	150	310	300	370	450	520	260 J		
Cadmium	6010		7440-43-9	1000						5.5			2.7 J		9.6	9.3	15	5.6	5.8	7.7	14	12	14	4.8 J		
Chromium	6010		7440-47-3	2000						47			23 J		92	74	120	55 J	54	310	180	93	92	47 J		
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000						NT			NT		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
Lead	6010		7439-92-1	6000						2100			290 J		5700 J	910 J	1200	810 J	940	730	860	1500	2000	1600 J		
Mercury	7471		7439-97-6	300						0.94			0.18		0.43	0.38	4	1.7	1.8	1.1	1.8	2.3 J	2.9	1.4		
Selenium	6010		7782-49-2	7000						5.4			4.1		2.8	2.5	1.5	2	1.5	< 1.3	< 1.2	< 1.2	1.1 J	1.6		
Silver	6010		7440-22-4	2000						1.5			0.39 J		1.4	< 1.4	< 1.5	< 1.4	2.6	< 1.3	< 1.2	1.6	1.8	1.4		
TCLP Metals	1311	mg/L			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Chromium			7440-47-3	NA																						
Lead			7439-92-1	NA																						
Cyanides		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Physiologically Available Cyanide	9012B		PACN	NE																						
Total Cyanide	9102B		57-12-5	5000																						

- General Notes:**
- Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 - ft = feet
 - CAS No. = Chemical Abstracts Service Number
 - MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 - UCL = Upper Concentration Limit.
 - "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 - NT = The sample was not tested for this analyte.
 - mg/kg = milligrams/kilogram
 - mg/L = milligrams/liter
 - NE = Not Established
 - ND = Not Detected
 - Bolding indicates a detected result concentration
 - Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 - Soil samples for PCB analysis were extracted by Method 3540C.
 - Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					HA-09	HA-10	HA-11	HA-12	LS-01	LS-01	LS-02	LS-02	M-07	M-07	M-07	M4	M4	M-4E	M-4E	M-4N	M-4N	M-4S	M-4W	M-7E	M-7E	
Sample Name					HA-09-0001	HA-10-0001	HA-11-0001	HA-12-0001	LS-01-0103	LS-01-0708	LS-02-0102	LS-02-0203	M-7-0102	M-7-0203	M-7-0607	M-4-0203	M-4-1213	M-4E-0001	M-4E-0103	M-4N-0001	M-4N-0103	M-4S-0103	M-4W-0103	M-7E-0001	M-7E-0103	
Start Depth					0	0	0	0	1	7	1	2	1	2	6	2	12	0	1	0	1	1	1	0	1	
End Depth					1	1	1	1	3	8	2	3	2	3	7	3	13	1	3	1	3	3	3	3	1	3
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
Sample Date					6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/7/2016	6/7/2016	6/7/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/7/2016	6/7/2016	
Parent Sample																										
Analyte	Method	Units	CAS No.	MCP UCLs																						
Metals		mg/kg											NT		NT	NT	NT	NT	NT				NT	NT	NT	
Arsenic	6010		7440-38-2	500	12	11	13	20	5.9	5.8	11	22		4.5								35	15		21	
Barium	6010		7440-39-3	10000	170	320	300	370	23	31	70	850		23								610	1100		950	
Cadmium	6010		7440-43-9	1000	7.3	3.8	11	13	0.16 J	< 0.25	0.65	5.8		< 0.25								11	3.9		16	
Chromium	6010		7440-47-3	2000	51	38	68	230	13	12	44	55		14								54	66		81	
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT	NT	NT	NT	NT	NT		NT								NT	< 6.61 J		NT	
Lead	6010		7439-92-1	6000	310	720	1100	1400	15	5.5	67	1400		14								1400	1300		1800	
Mercury	7471		7439-97-6	300	0.38	1.1	4.1	4.9	0.037 J	< 0.05	0.1	3.6		0.055								1.2	3.8 J		2.8	
Selenium	6010		7782-49-2	7000	2.9	2.9	< 1.1	< 1.4	1 J	1.5 J	1.5	< 1.6		2.6								< 0.87	< 1.8		7.2	
Silver	6010		7440-22-4	2000	< 1.3	< 1.4	2	1.6	< 1	< 1.5	< 1	< 1.6		0.11 J								< 0.87	< 1.8		2	
TCLP Metals	1311	mg/L			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Chromium			7440-47-3	NA																						
Lead			7439-92-1	NA																						
Cyanides		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Physiologically Available Cyanide	9012B		PACN	NE																						
Total Cyanide	9102B		57-12-5	5000																						

- General Notes:**
- Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 - ft = feet
 - CAS No. = Chemical Abstracts Service Number
 - MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 - UCL = Upper Concentration Limit.
 - "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 - NT = The sample was not tested for this analyte.
 - mg/kg = milligrams/kilogram
 - mg/L = milligrams/liter
 - NE = Not Established
 - ND = Not Detected
 - Bolding indicates a detected result concentration
 - Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 - Soil samples for PCB analysis were extracted by Method 3540C.
 - Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					M-7S	M-7S	M-7W	M-7W	MS-01	MS-01	MS-01	MS-02	MS-02	MS-03	MS-03	NPA-01	NPA-01	NPA-02	NPA-02	NPA-02	NPA-03	NPA-03	NPA-04	NPA-04	NPA-05
Sample Name					M-7S-0001	M-7S-0103	M-7W-0001	M-7W-0103	MS-01-0102	MS-01-0203	MS-01-1213	MS-02-0102	MS-02-0203	MS-03-0102	MS-03-0203	NPA-01-0.502	NPA-01-0203	NPA-02-0.502	NPA-02-0203	NPA-02-0607	NPA-03-0.502	NPA-03-0203	NPA-04-0.502	NPA-04-0203	NPA-05-0.502
Start Depth					0	1	0	1	1	2	12	1	2	1	2	0.5	2	0.5	2	6	0.5	2	0.5	2	0.5
End Depth					1	3	1	3	2	3	13	2	3	2	3	2	3	2	3	7	2	3	2	3	2
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016
Parent Sample																									
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals		mg/kg			NT	NT	NT			NT									NT						
Arsenic	6010		7440-38-2	500			NT		9.4	9.6		8.7	8.9	8.1	8.3	5.1	8.9	6.2 J	8.4 J		9.3	4.9	7	8.5	8.6
Barium	6010		7440-39-3	10000			NT		190	85		120	210	130	110	87	32	58	49		91	91	65	39	97
Cadmium	6010		7440-43-9	1000			NT		0.37	1		2	4.9	2	1.4	0.61	0.2	0.63	0.15 J		0.33	0.19 J	0.46	1.1	0.62
Chromium	6010		7440-47-3	2000			NT		44	26		45	45	21	26	18	13	21	17		32	10	26	15	15
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000			< 0.588		NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Lead	6010		7439-92-1	6000			NT		230	190		160	490	190	210	350	100	230	160		390	600	450	250	270
Mercury	7471		7439-97-6	300			NT		0.076	1.2		0.21	0.38	0.11	0.18	0.83	0.27	0.12	0.12		0.18	0.21	0.37	0.15	0.31
Selenium	6010		7782-49-2	7000			NT		0.88 J	1.1 J		1 J	0.79 J	0.71 J	0.78 J	0.83 J	0.73 J	0.75 J	< 1.4		1.3 J	< 1.5	< 1.3	< 1.4	< 1.6
Silver	6010		7440-22-4	2000			NT		< 1.4	< 1.3		0.32 J	0.13 J	< 1.5	0.078 J	< 1.2	< 1	< 1.4	< 1.4		< 1.4	< 1.5	< 1.3	< 1.4	< 1.6
TCLP Metals	1311	mg/L			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Chromium			7440-47-3	NA																					
Lead			7439-92-1	NA																					
Cyanides		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Physiologically Available Cyanide	9012B		PACN	NE																					
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					NPA-05	NPA-06	NPA-06	NPA-07	NPA-07	P-13	P-13	P-13	P-13N	P-13N	P-13S	P-13S	P-13S	P-13W	P-13W	SA-01	SB-3	SB-3	SB-3E	SB-3E	SB-3N
Sample Name					NPA-05-0203	NPA-06-0.502	NPA-06-0203	NPA-07-0.502	NPA-07-0203	P-13-0102	P-13-0203	P-13-0910	P-13N-0001	P-13N-0103	P-13S-0001	P-13S-0103	P-13S-FD-07	P-13W-0001	P-13W-0103	SA-01-0103	SB-3-0203	SB-3-0506	SB-3E-0001	SB-3E-0103	SB-3N-0103
Start Depth					2	0.5	2	0.5	2	1	2	9	0	1	0	1	1	0	1	1	2	2	5	0	1
End Depth					3	2	3	2	3	2	3	10	1	3	1	3	3	1	3	3	3	3	6	1	3
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/9/2016
Parent Sample																									
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals					mg/kg																				
Arsenic	6010		7440-38-2	500	13	18	9.8	8.4	9.9	42					14									21	
Barium	6010		7440-39-3	10000	66	140	450	120	140	600					350										3400
Cadmium	6010		7440-43-9	1000	9	0.74	5.8	1.3	0.45	9.8					13										5.3
Chromium	6010		7440-47-3	2000	25	56	43	32	22	130					200										31
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT	NT	NT	NT					NT										NT
Lead	6010		7439-92-1	6000	370	320	750	450	710	2400					1700										3800
Mercury	7471		7439-97-6	300	0.95	0.32	0.22	1.3	0.5	5.3					4.1										5.4
Selenium	6010		7782-49-2	7000	0.68 J	2	< 1.3	< 1.5	0.52 J	< 1.3					2.4										2.5
Silver	6010		7440-22-4	2000	0.21 J	0.18 J	0.15 J	0.1 J	0.12 J	2.5					4.2										1.3 J
TCLP Metals					mg/L																				
Chromium			7440-47-3	NA																					
Lead			7439-92-1	NA																					
Cyanides					mg/kg																				
Physiologically Available Cyanide	9012B		PACN	NE																					
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
- Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 - ft = feet
 - CAS No. = Chemical Abstracts Service Number
 - MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 - UCL = Upper Concentration Limit.
 - "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 - NT = The sample was not tested for this analyte.
 - mg/kg = milligrams/kilogram
 - mg/L = milligrams/liter
 - NE = Not Established
 - ND = Not Detected
 - Bolding indicates a detected result concentration
 - Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 - Soil samples for PCB analysis were extracted by Method 3540C.
 - Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					SB-3S	SB-3S	SB-3W	SB-3W	SS-01	SS-01	SVA-01	SVA-01	SVA-02	SVA-02	SVA-03	SVA-03	SVA-03	SVA-04	SVA-04	SVA-05	SVA-05	SVA-06	SVA-06	SVA-07	SVA-07
Sample Name					SB-3S-0001	SB-3S-0103	SB-3W-0001	SBB-3W-0103	SS-01-0102	SS-01-0708	SVA-01-001	SVA-01-0103	SVA-02-0001	SVA-02-0103	SVA-03-0001	SVA-03-0103	FD-06	SVA-04-0001	SVA-04-0103	SVA-05-0001	SVA-05-0103	SVA-06-0001	SVA-06-0103	SVA-07-0001	SVA-07-0103
Start Depth					0	1	0	1	1	7	0	1	0	1	0	1	1	0	1	0	1	0	1	0	1
End Depth					1	3	1	3	2	8	1	3	1	3	1	3	3	1	3	1	3	1	3	1	3
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/9/2016	6/9/2016	6/9/2016	6/9/2016	6/8/2016	6/8/2016	6/7/2016	6/7/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/8/2016	6/9/2016	6/9/2016
Parent Sample																	SVA-03-0103								
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals						mg/kg																			
Arsenic	6010		7440-38-2	500	50				8.9	20	8.9	7.7	19	15	11 J	28 J	53 J	11	16	12	13	< 0.72	10	9.2	15
Barium	6010		7440-39-3	10000	150				110	1600	120	57	350	480	120	1200	1100	270	520	270	250	170	160	170	360
Cadmium	6010		7440-43-9	1000	4.1				1.3	4.6	1.9	0.48	6.2	5.6	2.7	6.7	7.8	4.2	3.1	13	12	24	6.2	4.2	4.8
Chromium	6010		7440-47-3	2000	83				51	46	42	18	61	42	57 J	440 J	450 J	50	48	110	120	40000	100	57	44
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT				NT	NT	NT	NT	NT	NT	NT	< 0.605	< 3.09	NT	NT	NT	NT	NT	NT	NT	NT
Lead	6010		7439-92-1	6000	500				210	3100	740	38	1000	1200	380 J	6700 J	5400 J	1400	2900	1400	1100	680	930	610	1200
Mercury	7471		7439-97-6	300	0.92				0.49	0.91	0.49	0.071	1.8	0.99	1.5 J	0.48 J	0.57 J	2.6	1.9	4.4	4.8	11	2.4	2.7	2.7
Selenium	6010		7782-49-2	7000	3.6				2.1	11	3.2	3.2	5.7	5.2	4.9 J	9.7 J	4 J	5.6	8.5	3.8	5.1	< 1.1	5.6	3	1.4
Silver	6010		7440-22-4	2000	1.4				0.8 J	2.4	2.7	0.22 J	2	1.4 J	1.6	2.7	2.7	1.4	8	3.1	3	1.7	2.2	0.55 J	0.57 J
TCLP Metals						mg/L																			
Chromium			7440-47-3	NA																					
Lead			7439-92-1	NA												4.73						0.0059 J			
Cyanides						mg/kg																			
Physiologically Available Cyanide	9012B		PACN	NE																					
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					SVA-08	SVA-08	TP-01	TP-01	TP-02	TP-02	TP-03	TP-03	TP-04	TP-04	TP-05	TP-05	TP-06	TP-06	TP-07	TP-07	TP-08	TP-08	TP-08	TP-09	TP-09
Sample Name					SVA-08-0001	SVA-08-0103	TP-01-0001	TP-01-0203	TP-02-0001	TP-02-0304	TP-03-0001	TP-03-0405	TP-04-0001	TP-04-0506	TP-05-0001	TP-05-0405	TP-06-0001	TP-06-0910	TP-07-0001	TP-07-0708	TP-08-0001	TP-08-0910	FD-11	TP-09-0001	TP-09-0910
Start Depth					0	1	0	2	0	3	0	4	0	5	0	4	0	9	0	7	0	9	9	0	9
End Depth					1	3	1	3	1	4	1	5	1	6	1	5	1	10	1	8	1	10	10	1	10
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/9/2016	6/9/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016
Parent Sample																							TP-08-0910		
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals					mg/kg																				
Arsenic	6010		7440-38-2	500	12	28	13	8.9	12	17	6.9	12	9.6	11	13 J	< 0.78 J	15	9.1	9.3	14	15	15	14	22	20
Barium	6010		7440-39-3	10000	110	440	260	97	250	380	41	260	110	210	300 J	210 J	270	190	120	260	350	320	320	290	390
Cadmium	6010		7440-43-9	1000	1.5	3.7	8.7	1.8	7.8	17	0.14 J	5.9	1.2	2.1	4.8 J	29 J	17	3.2	8.2	25	12	15	11	19	16
Chromium	6010		7440-47-3	2000	87	74	260	38	61	74	18	77	53	34	160 J	86000 J	230	100	55	100	140 J	71 J	62	150	95
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Lead	6010		7439-92-1	6000	240	800	760	150	660	1400	64	550	210	510	660 J	1200 J	1200	430	510 J	1000	1400	1400 J	1300	1200	2000
Mercury	7471		7439-97-6	300	0.6	1.5	1.4	0.4	1.1	3.6	0.093	1.2	0.2	1.4	2.2 J	2.6 J	6.9	1.3	13	14	3.1	2.1	2.5	6.3	2.4
Selenium	6010		7782-49-2	7000	1.1 J	1.7	5.6	4.2	6	2.8	3	4.5	5.3	4.3	3.4	< 1.2	< 1.3	1.2 J	5.4	< 1.3	< 1.3	1.7	< 1.4	< 1.5	< 1.6
Silver	6010		7440-22-4	2000	0.18 J	0.55 J	1.1 J	< 1.5	0.5 J	0.76 J	< 1.6	0.51 J	< 1.5	0.33 J	1.1 J	< 1.2	2	0.45 J	0.95 J	2.3	1.8	1.9	2.1	2.7	2.3
TCLP Metals					mg/L																				
Chromium			7440-47-3	NA												0.0189									
Lead			7439-92-1	NA																					
Cyanides					mg/kg																				
Physiologically Available Cyanide	9012B		PACN	NE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					TP-10	TP-10	TP-11	TP-11	TP-12	TP-12	TP-13	TP-13	TP-14	TP-14	TP-15	TP-15	TP-16	TP-16	TP-17	TP-17	TP-18	TP-18	TP-19	TP-19	TP-20
Sample Name					TP-10-0001	TP-10-0607	TP-11-0001	TP-11-0506	TP-12-0001	TP-12-0607	TP-13-0001	TP-13-0506	TP-14-0001	TP-14-0506	TP-15-0001	TP-15-0809	TP-16-0001	TP-16-0809	TP-17-0001	TP-17-0304	TP-18-0001	TP-18-0304	TP-19-0001	TP-19-0607	TP-20-0001
Start Depth					0	6	0	5	0	6	0	5	0	5	0	8	0	8	0	3	0	3	0	6	0
End Depth					1	7	1	6	1	7	1	6	1	6	1	9	1	9	1	4	1	4	1	7	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					6/14/2016	6/14/2016	6/16/2016	6/16/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/15/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/15/2016	6/15/2016	6/16/2016	6/16/2016	6/15/2016	6/15/2016	6/14/2016
Parent Sample																									
Analyte	Method	Units	CAS No.	MCP UCLs																					
Metals					mg/kg																				
Arsenic	6010		7440-38-2	500	18	12	15	16	65	20	17	41	21	26	15	15	13	13	15	17	10	5.6	29	16	12
Barium	6010		7440-39-3	10000	250	340	330	360	400	390	210	260	230	280	280	280	240	230	280	300	240	34	370	280	170
Cadmium	6010		7440-43-9	1000	26	3.2	18	26	18	20	16	27	11	15	11	15	21	12	6.9	6.3	9.9	0.32	19	12	16
Chromium	6010		7440-47-3	2000	130	44	150	170	91	260	270	14000	1400	290	120	230	120	170	160	100	79	28	1200	130	120
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	< 0.568	NT
Lead	6010		7439-92-1	6000	1000	1000	1300	1500	790	6500	740	1100	1100	1700	700	1500	820	740	780	920	690	26	2000	1200	610
Mercury	7471		7439-97-6	300	3.2	0.96	14	18	4.8	5.7	6.4	6.1	4.2	4.1	3.4	2.1	16	12	0.81	0.65	12	0.091	7.1	7.2	0.86
Selenium	6010		7782-49-2	7000	< 1.6	1.6	< 1	< 1.5	< 0.87	< 1.4	< 1.1	< 1.1	< 1.1	< 1.5	< 1.6	< 1.2	< 1.5	< 1.2	4.7	4.2	2.7	0.71 J	< 1.1	< 1.4	180
Silver	6010		7440-22-4	2000	0.83 J	2.6	1.6	0.55 J	3.1	4.3	2.9	6.9	1.4	3.1	1.8	2	11	3.1	0.34 J	1.3	2.7	< 1.1	2.2	1.6	1.7
TCLP Metals					mg/L																				
Chromium			7440-47-3	NA								0.0038 J													
Lead			7439-92-1	NA					1.58																
Cyanides					mg/kg																				
Physiologically Available Cyanide	9012B		PACN	NE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Total Cyanide	9102B		57-12-5	5000																					

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
 2. ft = feet
 3. CAS No. = Chemical Abstracts Service Number
 4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
 5. UCL = Upper Concentration Limit.
 6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 7. NT = The sample was not tested for this analyte.
 8. mg/kg = milligrams/kilogram
 9. mg/L = milligrams/liter
 10. NE = Not Established
 11. ND = Not Detected
 12. Bolding indicates a detected result concentration
 13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 14. Soil samples for PCB analysis were extracted by Method 3540C.
 15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:
 J The result is an estimated value.

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

					Location Name	TP-20	TP-20	WSB-6	WSB-6	WSB-6N	WSB-6N	WSB-6W	WSB-6W
					Sample Name	FD-10	TP-20-0506	WSB-6-0001	WSB-6-0103	WSB-6N-0001	WSB-6N-0103	WSB-6W-0001	WSB-6W-0103
					Start Depth	0	5	0	1	0	1	0	1
					End Depth	1	6	1	3	1	3	1	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/14/2016	6/14/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016
					Parent Sample	TP-20-0001							
Analyte	Method	Units	CAS No.	MCP UCLs									
Volatile Organic Compounds (VOCs)	8260	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT
Acetone			67-64-1	10000									
Benzene			71-43-2	10000									
n-Butylbenzene			104-51-8	NE									
sec-Butylbenzene			135-98-8	NE									
tert-Butylbenzene			98-06-6	NE									
Chlorobenzene			108-90-7	10000									
p-Cymene (4-Isopropyltoluene)			99-87-6	NE									
1,2-Dichlorobenzene (o-DCB)			95-50-1	10000									
1,1-Dichloroethane			75-34-3	10000									
1,2-Dichloroethane			107-06-2	9000									
cis-1,2-Dichloroethane			156-59-2	5000									
Ethylbenzene			100-41-4	10000									
2-Hexanone			591-78-6	NE									
Isopropylbenzene			98-82-8	NE									
Methyl ethyl ketone (2-Butanone)			78-93-3	10000									
Methyl tert-butyl ether (MTBE)			1634-04-4	5000									
Naphthalene			91-20-3	10000									
n-Propylbenzene			103-65-1	NE									
Tetrachloroethene (PCE)			127-18-4	10000									
Tetrahydrofuran			109-99-9	NE									
Toluene			108-88-3	10000									
Trichloroethene (TCE)			79-01-6	600									
Trichlorofluoromethane (Freon 11)			75-69-4	NE									
1,2,4-Trimethylbenzene			95-63-6	NE									
1,3,5-Trimethylbenzene			108-67-8	NE									
o-Xylene			95-47-6	NE									
m/p-Xylene			179601-23-1	NE									
Total Xylene			1330-20-7	10000									
Polycyclic Aromatic Hydrocarbons	8270	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT
Acenaphthene			83-32-9	10000									
Acenaphthylene			208-96-8	10000									
Anthracene			120-12-7	10000									
Benzo(a)anthracene			56-55-3	3000									
Benzo(b)fluoranthene			205-99-2	3000									
Benzo(k)fluoranthene			207-08-9	10000									
Benzo(g,h,i)perylene			191-24-2	10000									
Benzo(a)pyrene			50-32-8	300									
Chrysene			218-01-9	10000									
Dibenz(a,h)anthracene			53-70-3	300									
Fluoranthene			206-44-0	10000									
Fluorene			86-73-7	10000									
Indeno(1,2,3-cd)pyrene			193-39-5	3000									
2-Methylnaphthalene			91-57-6	5000									
Naphthalene			91-20-3	10000									
Phenanthrene			85-01-8	10000									
Pyrene			129-00-0	10000									
Extractable Petroleum Hydrocarbons	MAEPH	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000									
C11-C22 Aromatics, Adjusted			EPH1122ADJ	NE									
C19-C36 Aliphatics			EPH1936	20000									
Acenaphthene			83-32-9	10000									
Acenaphthylene			208-96-8	10000									
Anthracene			120-12-7	10000									
Benzo(a)anthracene			56-55-3	3000									
Benzo(b)fluoranthene			205-99-2	3000									
Benzo(k)fluoranthene			207-08-9	10000									
Benzo(g,h,i)perylene			191-24-2	10000									
Benzo(a)pyrene			50-32-8	300									
Chrysene			218-01-9	10000									
Dibenz(a,h)anthracene			53-70-3	300									
Fluoranthene			206-44-0	10000									
Fluorene			86-73-7	10000									
Indeno(1,2,3-cd)pyrene			193-39-5	3000									
2-Methylnaphthalene			91-57-6	5000									
Naphthalene			91-20-3	10000									
Phenanthrene			85-01-8	10000									
Pyrene			129-00-0	10000									
Polychlorinated Biphenyls (PCBs)	8082	mg/kg											
Aroclor 1248			12672-29-6	NE	1.5	2.4	< 0.71	< 0.039	< 0.71	< 0.04	< 0.72	< 0.044	< 0.044
Aroclor 1260			11096-82-5	NE	3.2	4.5	5.2	0.099	5.7	0.11	5.5	< 0.044	< 0.044
Total PCBs Aroclors			1336-36-3	100	4.7	6.9	5.2	0.099	5.7	0.11	5.5	< 0.044	< 0.044

Table 5. Soil Chemical Testing Results – EPA (Nobis) Targeted Brownfields Assessment (2016)
Former Tombarello Site
Lawrence, Massachusetts

					Location Name	TP-20	TP-20	WSB-6	WSB-6	WSB-6N	WSB-6N	WSB-6W	WSB-6W
					Sample Name	FD-10	TP-20-0506	WSB-6-0001	WSB-6-0103	WSB-6N-0001	WSB-6N-0103	WSB-6W-0001	WSB-6W-0103
					Start Depth	0	5	0	1	0	1	0	1
					End Depth	1	6	1	3	1	3	1	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/14/2016	6/14/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016	6/7/2016
					Parent Sample	TP-20-0001							
Analyte	Method	Units	CAS No.	MCP UCLs									
Metals		mg/kg			NT		NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500			18						
Barium	6010		7440-39-3	10000			140						
Cadmium	6010		7440-43-9	1000			6.7						
Chromium	6010		7440-47-3	2000			55						
Hexavalent Chromium (Cr VI)	6010		18540-29-9	2000			NT						
Lead	6010		7439-92-1	6000			10000						
Mercury	7471		7439-97-6	300			1.2						
Selenium	6010		7782-49-2	7000			2.4						
Silver	6010		7440-22-4	2000			1.2 J						
TCLP Metals	1311	mg/L			NT		NT	NT	NT	NT	NT	NT	NT
Chromium			7440-47-3	NA									
Lead			7439-92-1	NA			3.2						
Cyanides		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT
Physiologically Available Cyanide	9012B		PACN	NE									
Total Cyanide	9102B		57-12-5	5000									

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. mg/kg = milligrams/kilogram
9. mg/L = milligrams/liter
10. NE = Not Established
11. ND = Not Detected
12. Bolding indicates a detected result concentration
13. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
14. Soil samples for PCB analysis were extracted by Method 3540C.
15. Sample information that is shaded indicates the sample is not considered representative of current conditions.

Validators Qualifiers:

- J The result is an estimated value.

Table 6. Chemical Groundwater Chemical Testing Results - EPA (Nobis) Targeted Brownfields Assessment (2016) and Credere (2020)
Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP GW-2	MCP GW-3	MCP UCL	Location Name	MW-1	MW-8	MW-9	MW-11	MW-11	MW-12	MW-13	MW-13	MW-15	MW-16	SB/MW-5	SB/MW-5	
							Sample Name	MW-1	MW-08	MW-09	MW-11	MW-11-F	MW-12	MW-13	MW-13	MW-15	MW-16	CA-MW-5	CA-6	
Parent Sample							6/16/2016	6/13/2016	6/13/2016	6/13/2016	6/17/2016	6/14/2016	6/14/2016	6/14/2016	6/14/2016	6/16/2016	6/13/2016	1/10/2020	1/10/2020	
Polychlorinated Biphenyls (PCBs)	8082	ug/L																		
Total PCB Aroclors			1336-36-3	5	10	100	< 0.5 J	< 0.5 J	< 0.5 J	< 0.5	NT		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 J		NT	NT
Volatile Organic Compounds	8260	ug/L																		
Benzene			71-43-2	1,000	10000	100000	< 1	1.9	< 1	1.3			< 1	1.8	1.9	< 1	< 1			
Chlorobenzene			108-90-7	200	1000	10000	< 1	< 1	< 1	< 1			< 1	140	150	< 1	< 1			
Dichlorodifluoromethane (Freon 12)			75-71-8	NE	NE	NE	< 1	< 1	17	< 1			< 1	< 1	< 1	< 1	< 1			
1,1-Dichloroethane			75-34-3	2,000	20000	100000	< 1	< 1	< 1	2.3			< 1	< 1	< 1	< 1	< 1			
cis-1,2-Dichloroethene			156-59-2	20	50000	100000	< 1	1.6	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Ethylbenzene			100-41-4	20,000	5000	100000	< 1	2.6	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Methyl tert-butyl ether (MTBE)			1634-04-4	50000	50000	100000	< 1	4.6	1.6	< 1			< 1	< 1	< 1	< 1	< 1			
Naphthalene			91-20-3	700	20000	100000	< 1	3.1	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
n-Propylbenzene			103-65-1	NE	NE	NE	< 1	1.5	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Tetrachloroethene (PCE)			127-18-4	50	30000	100000	< 1	< 1	10	< 1			< 1	< 1	< 1	< 1	< 1			
Toluene			108-88-3	50,000	40000	100000	< 1	3.6	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Trichloroethene (TCE)			79-01-6	5	5000	50000	< 1	2.7	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
1,2,4-Trimethylbenzene			95-63-6	NE	NE	NE	< 1	10	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
1,3,5-Trimethylbenzene			108-67-8	NE	NE	NE	< 1	2.5	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Vinyl chloride			75-01-4	2	50000	100000	< 1	1	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
o-Xylene			95-47-6	NE	5000	NE	< 1	5.3	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
m/p-Xylene			179601-23-1	NE	5000	NE	< 1	10	< 1	< 1			< 1	< 1	< 1	< 1	< 1			
Total Xylene			1330-20-7	3,000	5000	100000	< 5	15	< 5	< 5			< 5	< 5	< 5	< 5	< 5			

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. CAS No. = Chemical Abstracts Service Number
3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
4. UCL = Upper Concentration Limit.
5. UCLs and Method 1 Standards (e.g. GW-2 and GW-3) are from the MCP.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. NE = Not established
9. ug/L = micrograms per liter
10. Bolding indicates a detected result concentration
11. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.

Validators Qualifiers:

- J** The result is an estimated value.

Table 7. Soil Chemical Testing Results – EPA Removal Action Verification Samples (2018)

Former Tombarello Site
Lawrence, Massachusetts

					Location Name	EHW-01	EW-01	EW-02	EW-03	EW-04	EW-05	EW-06	EW-07	FS-01	FS-02	FS-03	FS-04	FS-05	FS-06	FS-06	
					Sample Name	EHW-01	EW-01	EW-02	EW-03	EW-04	EW-05	EW-06	EW-07	FS-01	FS-02	FS-03	FS-04	FS-05	FS-106	FS-06	
					Start Depth	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3	3	3	3	3	3	3	3
					End Depth	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3	3	3	3	3	3	3	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018
					Parent Sample														FS-06		
Analyte	Method	Units	CAS No.	MCP UCL																	
Polychlorinated Biphenyls (PCBs)																					
Total PCB Aroclors	SOM02.4	mg/kg	1336-36-3	100	0.149	12	< 0.044	23	33	0.98	111	73	0.25	2.9	4.5	8.7	2.08	0.011	0.019		

					Location Name	FS-07	FS-08	FS-09	FS-10	FS-11	FS-12	FS-13	FS-14	FS-15	FS-16	FS-17	FS-18	FS-19	FS-20	HF-01	
					Sample Name	FS-07	FS-08	FS-09	FS-10	FS-11	FS-12	FS-13	FS-14	FS-15	FS-16	FS-17	FS-18	FS-19	FS-20	HF-101	
					Start Depth	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
					End Depth	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018
					Parent Sample																HF-01
Analyte	Method	Units	CAS No.	MCP UCL																	
Polychlorinated Biphenyls (PCBs)																					
Total PCB Aroclors	SOM02.4	mg/kg	1336-36-3	100	0.032	1.6	0.13	6.3	0.013	0.149	0.3	< 0.057	0.46	1.1	0.29	0.059	0.057	8.6	0.033		

					Location Name	HF-01	NHW-01	NW-01	NW-02	SHW-01	SW-01	WHW-01	WW-01	WW-01	WW-02	WW-03	WW-04	WW-05	WW-06	WW-07	
					Sample Name	HF-01	NHW-01	NW-01	NW-02	SHW-01	SW-01	WHW-01	WW-101	WW-01	WW-02	WW-03	WW-04	WW-05	WW-06	WW-07	
					Start Depth	3	1.5	1.5	1.5	1.5	1.5	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
					End Depth	3	1.5	1.5	1.5	1.5	1.5	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018
					Parent Sample								WW-01								
Analyte	Method	Units	CAS No.	MCP UCL																	
Polychlorinated Biphenyls (PCBs)																					
Total PCB Aroclors	SOM02.4	mg/kg	1336-36-3	100	< 0.044	< 0.044	1.9	2	21	32.3	2.5	4.7	2	24	16.7	1.5	1	66	28		

General Notes:

1. Samples were extracted and analyzed for PCB aroclors by Method SOM02.4. Only the total of the aroclors is presented here.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. mg/kg = milligrams/kilogram or parts per million (ppm)
8. Bolding indicates a detected result concentration
9. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.

Table 8. Soil Chemical Testing Results – Credere Lot 1 Assessment (2019)

Former Tombarello Site
Lawrence, Massachusetts

Table with 17 columns: Analyte, Method, Units, CAS No., MCP UCL, and 12 sampling locations (A-05R, A-05R, A-06R, A-06R, A-06R, AS/SB-1, AS/SB-1, AS/SB-1, AS/SB-1, AS/SB-1, AS/SB-1, AS/SB-2, AS/SB-2, AS/SB-2). Rows include Volatile Organic Compounds, Extractable Petroleum Hydrocarbons, Polychlorinated Biphenyls (PCBs), Total Metals, and General Chemistry.

General Notes

- 1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. mg/kg = milligrams/kilogram or parts per million (ppm)
9. Bolding indicates a detected result concentration
10. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.

Qualifying Notes

- C- = The result has a low bias due to surrogate recovery below lower control limits.
C+ = The result has a high bias due to surrogate recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
F = The result is estimated due to matrix spike recovery outlier
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
G = The result is estimated due to duplicate precision outside control limits.
J = The reported result is below the laboratory reporting limit and is estimated.
K+ = The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.

Table 8. Soil Chemical Testing Results – Credere Lot 1 Assessment (2019)

Former Tombarello Site
Lawrence, Massachusetts

Table with 17 columns: Analyte, Method, Units, CAS No., MCP UCL, C-08R SB-DUP-4, C-08R C-08 (2-3), D-07R SB-DUP-5, D-07R D-07 (1-2), D-07R D-07 (1-3), D-07R D-07 (2-3), D-07R D-07 (7-9), D-09R D-09 (1-2), D-09R D-09 (2-3), E-02R E-02 (1-2), E-02R E-02 (2-3), E-05R SB-DUP-6, E-05R E-05 (1-2), E-05R E-05 (2-3). Rows include Volatile Organic Compounds, Extractable Petroleum Hydrocarbons, Polychlorinated Biphenyls (PCBs), Total Metals, and General Chemistry.

General Notes

- 1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. mg/kg = milligrams/kilogram or parts per million (ppm)
9. Bolding indicates a detected result concentration
10. Results that are shaded and bolded indicates that the detected concentration is above the UCL it was compared to.

Qualifying Notes

C- = The result has a low bias due to surrogate recovery below lower control limits.
C+ = The result has a high bias due to surrogate recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
F = The result is estimated due to matrix spike recovery outlier
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
G = The result is estimated due to duplicate precision outside control limits.
J = The reported result is below the laboratory reporting limit and is estimated.
K+ = The result has a high bias due to blank spike or laboratory control sample recovery above upper control limit.

Table 9. Asphalt Chemical Testing Results – Credere Lot 1 Assessment (2019)
Former Tombarello Site
Lawrence, Massachusetts

Location Name			AS-1	AS-2	AS-DUP-1	AS-3	AS-4	AS-5	AS-6	AS-7	AS-8
Sample Name			AS-1	AS-2	AS-2	AS-3	AS-4	AS-5	AS-6	AS-7	AS-8
Start Depth			0	0	0	0	0	0	0	0	0
End Depth			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Depth Unit			in	in	in	in	in	in	in	in	in
Sample Date			9/3/2019	9/3/2019	9/3/2019	9/3/2019	9/3/2019	9/3/2019	9/3/2019	9/3/2019	9/3/2019
Parent Sample			AS-2								
Analyte	Units	CAS No.									
Polychlorinated Biphenyls (PCBs)											
Aroclor 1260	mg/kg	11096-82-5	0.986	0.508	1.61	0.184	0.354	0.0384	7.1	<0.0365	<0.037
Total PCB Aroclors		1336-36-3	0.986	0.508	1.61	0.184	0.354	0.0384	7.1	<0.0365	<0.037

Notes:

1. < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
2. in = inches
3. mg/kg = milligrams/kilogram.
4. CAS No. = Chemical Abstracts Service Number
5. Bolding indicates a detected result concentration

Table 10. GEI Supplemental Phase II At-Grade Investigations Summary
Former Tombarello Site
Lawrence, Massachusetts

Sample Location	Target Sample Depth Intervals (ft) ^{Note 2}	Analytes (Analysis Method)					Rationale
		VOCs (8260)	EPH with Target PAHs (MAEPH)	PCBs (8082)	RCRA 8 Metals plus Zinc (6010, 7471[Hg])	Total Cr (6010)/ Hexavalent Cr (7196)	
At-Grade Soil Investigations - July 31 - August 7, 2019							
CD-34E-GEI	3-5, 5-7			X			To delineate the depth extent of PCB contamination > 100 ppm in soil previously detected by Nobis at CD-34E.
CD-34EN	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by Nobis at CD-34E.
CD-34EN	2-3		X				To evaluate the presence of petroleum observed in boring.
CD-34EE	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by Nobis at CD-34E.
CD-34EE	2-3		X				To evaluate the presence of petroleum observed in boring.
CD-34ES	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by Nobis at CD-34E.
CD-34EW	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by Nobis at CD-34E.
D-5NS	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the extent to the north of PCB contamination > 50 ppm in soil previously detected by Haley & Aldrich at D5.
EW-06-GEI	2-3, 3-5, 5-7			X			To delineate the depth extent of PCB contamination > 100 ppm in soil previously detected by EPA in 2018 at EW-06.
EW-06N	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by EPA in 2018 at EW-06.
EW-06E	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 100 ppm in soil previously detected by EPA in 2018 at EW-06.
EW-07-GEI	2-3, 3-5, 5-7			X			To delineate the depth extent of PCB contamination > 50 ppm in soil previously detected by EPA at EW-07.
EW-07E	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by EPA at EW-07.
EW-07S	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by EPA at EW-07.
EW-07W	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by EPA at EW-07.
Q-05-GEI	5-7	X	X	X	X	X	To develop a comprehensive data set for risk characterization to meet the requirements of the MCP.
SB-3W-GEI	3-5, 5-7			X			To delineate the depth extent of PCB contamination > 50 ppm in soil previously detected by Nobis at SB-3W.
SB-3WN	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by Nobis at SB-3W.
SB-3WW	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by Nobis at SB-3W.
SB-3WS	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by Nobis at SB-3W.
SB6-N1-GEI	1-2, 2-3, 3-5, 5-7			X			To delineate the depth extent of PCB contamination > 50 ppm in soil previously detected by HEA at SB6-N1. To collect additional data for risk characterization.
SB6-N1N	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by HEA at SB6-N1.
SB6-N1E	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by HEA at SB6-N1.
SB6-N1S	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by HEA at SB6-N1.
SB6-N1W	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by HEA at SB6-N1.
SVA-05-GEI	3-5, 5-7			X			To delineate the depth extent of PCB contamination > 100 ppm in soil previously detected by Nobis at SVA-05. To collect data for risk characterization.
SVA-05N	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the extent of PCB contamination > 100 ppm in soil.
SVA-05E	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the extent of PCB contamination > 100 ppm in soil.
SVA-05W	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the extent of PCB contamination > 100 ppm in soil.
SVA-06-GEI	0-1, 1-2					X	To evaluate potential chromium hot spot in soil detected by Nobis at SVA-06. Shifted due to presence of stockpile.
W-07-GEI	0-3	X	X	X	X	X	To develop a comprehensive data set for risk characterization to meet the requirements of the MCP.
	5-7	X	X	X	X	X	To develop a comprehensive data set for risk characterization to meet the requirements of the MCP.
WSB-26-GEI	5-7	X	X	X	X	X	To develop a comprehensive data set for risk characterization to meet the requirements of the MCP.
WW-06-GEI	2-3, 3-5, 5-7			X			To delineate the depth extent of PCB contamination > 50 ppm in soil detected by EPA at WW-06.
WW-06N	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil detected by EPA at WW-06. To collect additional data for risk characterization.
WW-06N	5-7	X	X	X	X	X	To develop a comprehensive data set for risk characterization to meet the requirements of the MCP.
WW-06S	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil detected by EPA at WW-06.
WW-06W	0-0.5, 1-2, 2-3, 3-5, 5-7			X			To delineate the horizontal extent of PCB contamination > 50 ppm in soil detected by EPA at WW-06.
At-Grade Soil Investigations - September 10 - 16, 2019							
EW-07SE	0-0.5, 1-2			X			To delineate horizontal extent of PCB contamination >100 ppm detected in EW-07S
EW-07SS	0-0.5, 1-2			X			To delineate horizontal extent of PCB contamination >100 ppm detected in EW-07S
EW-07SW	0-0.5, 1-2			X			To delineate horizontal extent of PCB contamination >100 ppm detected in EW-07S
SVA-05-GEI	0-0.5, 1-2, 2-3			X			To re-evaluate previously detected PCB concentration >100 ppm in SVA-05
W-07E	0-0.5, 1-2, 2-3			X			To evaluate horizontal extent of PCBs >100 ppm detected in W-07.
W-07N	0-0.5, 1-2, 2-3			X			To evaluate horizontal extent of PCBs >100 ppm detected in W-07.
W-07S	0-0.5, 1-2, 2-3			X			To evaluate horizontal extent of PCBs >100 ppm detected in W-07.
W-07W	0-0.5, 1-2, 2-3			X			To evaluate horizontal extent of PCBs >100 ppm detected in W-07.
At-Grade Soil Investigations - March 12 - 13, 2020							
EW-07ER	0-0.5, 1-2, 2-3, 3-5			X			To re-evaluate the horizontal extent of PCB contamination > 50 ppm in soil previously detected by EPA at EW-07.
EW-07SE	2-3, 3-5			X			To delineate the depth extent of PCBs > 100 ppm at EW-07SE
EW-07SEE	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm East of EW-07SE
EW-07SSE	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm East of EW-07SS
EW-07SSS	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm South of EW-07SS
EW-07SSW	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm West of EW-07SS
SB-3WWN	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm North of SB-3WW
SB-3WWS	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm South of SB-3WW
SB-3WWW	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm West of SB-3WW
SVA-01-GEI	0-0.5, 1-2, 2-3, 3-5			X			Re-evaluate PCB concentration of 100 ppm previously detected at SVA-01 by Nobis.
SVA-01E	0-0.5, 1-2, 2-3, 3-5			X			Evaluate horizontal extent to the east of PCBs greater than 100 ppm detected by Nobis at SVA-01.
W-07EE	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm East of W-07E
W-07SE	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm East of W-07S
W-07SS	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm South of W-07S
W-07SW	0-0.5, 1-2, 2-3, 3-5			X			To delineate the extent of PCBs > 100 ppm West of W-07S

General Notes:

- At-grade investigations are investigation locations that were not located within soil piles or the soil berm.
- Analysis of samples collected from depths greater than 3 ft for the purpose of evaluating the depth extent of PCBs were held pending the results of analysis of shallower samples. Samples at depths greater than 3 feet were analyzed if the shallower result was greater than 50 ppm PCBs.
- ft = feet
- PCB = Polychlorinated biphenyls
- EPH = Extractable petroleum hydrocarbon
- PAH = Polycyclic Aromatic Hydrocarbon
- RCRA = Resource Conservation and Recovery Act
- VOC = Volatile organic compounds
- Cr = Chromium
- ppm = parts per million

Table 11. Soil Chemical Testing Results - GEI At-Grade Samples (2019-2020)

Former Tombarello Site
Lawrence, Massachusetts

Table with columns for Analyte, Method, Units, CAS No., MCP UCL, and 24 sampling locations (CD-34EE, CD-34EN, CD-34ES, CD-34EW, D-5NS, EW-06E). Rows include Volatile Organic Compounds, EPH Compounds, Polychlorinated Biphenyls (PCBs), Metals, and Other.

General Notes:

- 1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. ND = The analyte was not detected above the laboratory reporting limit. See the laboratory data sheets for the laboratory reporting limit.
9. NE = Not Established
10. EPH = Extractable Petroleum Hydrocarbon
11. mg/kg = milligrams/kilogram or parts per million (ppm)
12. s.u. = standard units
13. mV = millivolts
14. Bolding indicates a detected result concentration
15. Shading and bolding indicates that the detected concentration is above the UCL. It was compared to.

Validator Qualifiers:

- B+ = The analyte found in associated method blank and bias high
C = Results confirmed by re-analysis
C+ = The result has a high bias due to surrogate recovery above upper control limits.
C- = The result has a low bias due to surrogate recovery below lower control limits.
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
G = The result is estimated due to duplicate precision outside control limits.
K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
P = The result is estimated due to the presence of another Aroclor pattern.
P+ = The result has high bias and is estimated due to the presence of another Aroclor pattern.

Table 11. Soil Chemical Testing Results - GEI At-Grade Samples (2019-2020)

Former Tombarello Site
Lawrence, Massachusetts

Analyte	Method	Units	CAS No.	MCP UCL	EW-07SEE	EW-07SEE	EW-07SEE	EW-07SS	EW-07SS	EW-07SSE	EW-07SSE	EW-07SSE	EW-07SSS	EW-07SSS	EW-07SSS	EW-07SSW	EW-07SSW	EW-07SSW
					1802441-EW-07SEE 0-0.5	1802441-EW-07SEE 1-2	1802441-EW-07SEE 2-3	EW-07SS 0-0.5	EW-07SS 1-2	1802441-EW-07SSE 0-0.5	1802441-EW-07SSE 1-2	1802441-EW-07SSE 2-3	1802441-EW-07SSS 0-0.5	1802441-EW-07SSS 1-2	1802441-EW-07SSS 2-3	1802441-EW-07SSW 0-0.5	1802441-EW-07SSW 1-2	1802441-EW-07SSW 2-3
Location Name	Sample Name	Start Depth	End Depth	Depth Unit	Sample Date	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample	Parent Sample
Volatile Organic Compounds	8260	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Acetone			67-64-1	10000														
Methyl ethyl ketone (2-Butanone)			78-93-3	10000														
Naphthalene			91-20-3	10000														
Tetrachloroethene (PCE)			127-18-4	10000														
Trichloroethene (TCE)			79-01-6	600														
EPH Compounds	MAEPH	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000														
C11-C22 Aromatics			EPH1122	10000														
C19-C36 Aliphatics			EPH1936	20000														
Acenaphthene			83-32-9	10000														
Anthracene			120-12-7	10000														
Benzo(a)anthracene			56-55-3	3000														
Benzo(b)fluoranthene			205-99-2	3000														
Benzo(k)fluoranthene			207-08-9	10000														
Benzo(g,h,i)perylene			191-24-2	10000														
Benzo(a)pyrene			50-32-8	300														
Chrysene			218-01-9	10000														
Dibenz(a,h)anthracene			53-70-3	300														
Fluoranthene			206-44-0	10000														
Fluorene			86-73-7	10000														
Indeno(1,2,3-cd)pyrene			193-39-5	3000														
2-Methylnaphthalene			91-57-6	5000														
Naphthalene			91-20-3	10000														
Phenanthrene			85-01-8	10000														
Pyrene			129-00-0	10000														
Polychlorinated Biphenyls (PCBs)	8082	mg/kg																
Aroclor 1242			53469-21-9	NE	6.6	< 1.7	< 7.2	< 5.4	7.5 P+	4.1	< 0.06	< 0.07	4.4	61.4	0.09	8.0	0.1	< 0.06
Aroclor 1248			12672-29-6	NE	< 2.9	< 1.7	< 7.2	< 5.4	< 1.1	< 1.1	< 0.06	< 0.07	< 1.1	< 6.0	< 0.07	< 5.3	< 0.07	< 0.06
Aroclor 1254			11097-69-1	NE	< 2.9	< 1.7	< 7.2	42.5 P+	16.4 P+	< 1.1	< 0.06	< 0.07	< 1.1	< 6.0	< 0.07	< 5.3	< 0.07	< 0.06
Aroclor 1260			11096-82-5	NE	42.6	14.9	87.6	72.9 P+	21.8 P+	17.4	2.4 C+	< 0.07	9.4	7.1	< 0.07	56.0	< 0.07	< 0.06
Aroclor 1262			37324-23-5	NE	< 2.9	< 1.7	< 7.2	< 5.4	< 1.1	< 1.1	< 0.06	< 0.07	< 1.1	< 6.0	< 0.07	< 5.3	< 0.07	< 0.06
Aroclor 1268			11100-14-4	NE	< 2.9	< 1.7	< 7.2	< 5.4	< 1.1	< 1.1	< 0.06	< 0.07	< 1.1	< 6.0	< 0.07	< 5.3	< 0.07	< 0.06
Total PCBs Aroclors			1336-36-3	100	49.2	14.9	87.6	115.4	45.7	21.5	2.4	ND	13.8	68.5	0.09	64	0.1	ND
Metals		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500														
Barium	6010		7440-39-3	10000														
Cadmium	6010		7440-43-9	1000														
Chromium, Total	6010		7440-47-3	2000														
Chromium VI	7196A		18540-29-9	2000														
Lead	6010		7439-92-1	6000														
Mercury	7471		7439-97-6	300														
Selenium	6020		7782-49-2	7000														
Zinc	6010		7440-66-6	10000														
Other					NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Corrosivity (pH)	9045	s.u.	CORROS (PH)	NE														
Oxidation Reduction Potential	2580	mV	ORP	NE														

General Notes:

- Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
- ft = feet
- CAS No. = Chemical Abstracts Service Number
- MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
- UCL = Upper Concentration Limit.
- "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
- NT = The sample was not tested for this analyte.
- ND = The analyte was not detected above the laboratory reporting limit. See the laboratory data sheets for the laboratory reporting limit.
- NE = Not Established
- EPH = Extractable Petroleum Hydrocarbon
- mg/kg = milligrams/kilogram or parts per million (ppm)
- s.u. = standard units
- mV = millivolts
- Bolding indicates a detected result concentration
- Shading and bolding indicates that the detected concentration is above the UCL. It was compared to.

Validator Qualifiers:

- B+ = The analyte found in associated method blank and bias high
- C = Results confirmed by re-analysis
- C+ = The result has a high bias due to surrogate recovery above upper control limits.
- C- = The result has a low bias due to surrogate recovery below lower control limits.
- F+ = The result has a high bias due to matrix spike recovery above upper control limits.
- F- = The result has a low bias due to matrix spike recovery below lower control limits.
- G = The result is estimated due to duplicate precision outside control limits.
- K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control.
- P = The result is estimated due to the presence of another Aroclor pattern.
- P+ = The result has high bias and is estimated due to the presence of another Aroclor pattern.

Table 11. Soil Chemical Testing Results - GEI At-Grade Samples (2019-2020)

Former Tombarello Site
Lawrence, Massachusetts

Table with columns for Analyte, Method, Units, CAS No., MCP UCL, and various sampling locations (SB6-N1-GEI, SVA-01E, etc.). Rows include Volatile Organic Compounds, EPH Compounds, Polychlorinated Biphenyls (PCBs), Metals, and Other parameters.

General Notes:

- 1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. ft = feet
3. CAS No. = Chemical Abstracts Service Number
4. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
5. UCL = Upper Concentration Limit.
6. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
7. NT = The sample was not tested for this analyte.
8. ND = The analyte was not detected above the laboratory reporting limit. See the laboratory data sheets for the laboratory reporting limit.
9. NE = Not Established
10. EPH = Extractable Petroleum Hydrocarbon
11. mg/kg = milligrams/kilogram or parts per million (ppm)
12. s.u. = standard units
13. mV = millivolts
14. Bolding indicates a detected result concentration
15. Shading and bolding indicates that the detected concentration is above the UCL. It was compared to.

Validator Qualifiers:

- B+ = The analyte found in associated method blank and bias high
C = Results confirmed by re-analysis
C+ = The result has a high bias due to surrogate recovery above upper control limits.
C- = The result has a low bias due to surrogate recovery below lower control limits.
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
G = The result is estimated due to duplicate precision outside control limits.
K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
P = The result is estimated due to the presence of another Aroclor pattern.
P+ = The result has high bias and is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					BBERM-01N	BBERM-01S	BBERM-02N	BBERM-02S	BBERM-03N	BBERM-03S	BBERM-04N	BBERM-04S	BBERM-05N	BBERM-05S	BBERM-06N	BBERM-06S	BBERM-07N	BBERM-07S	BBERM-08N	BBERM-08S	BBERM-09N	BBERM-09S	
Sample Name					BBerm-01N 0-1	BBerm-01S 0-1	BBerm-02N 0-1	BBerm-02S 0-1	BBerm-03N 0-1	BBerm-03S 0-1	BBerm-04N 0-1	BBerm-04S 0-1	BBerm-05N 0-1	BBerm-05S 0-1	BBerm-06N 0-1	BBerm-06S 0-1	BBerm-07N 0-1	BBerm-07S 0-1	BBerm-08N 0-1	BBerm-08S 0-1	BBerm-09N 0-1	BBerm-09S 0-1	
Start Depth					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Depth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/31/2019	9/11/2019	8/1/2019	9/11/2019	7/31/2019	9/11/2019	8/1/2019	9/11/2019	9/11/2019
Parent Sample																							
Analyte	Method	Units	CAS No.	MCP UCLs																			
EPH Compounds																							
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
C11-C22 Aromatics			EPH1122	10000																			
C19-C36 Aliphatics			EPH1936	20000																			
Acenaphthene			83-32-9	10000																			
Acenaphthylene			208-96-8	10000																			
Anthracene			120-12-7	10000																			
Benzo(a)anthracene			56-55-3	3000																			
Benzo(b)fluoranthene			205-99-2	3000																			
Benzo(k)fluoranthene			207-08-9	10000																			
Benzo(g,h,i)perylene			191-24-2	10000																			
Benzo(a)pyrene			50-32-8	300																			
Chrysene			218-01-9	10000																			
Dibenz(a,h)anthracene			53-70-3	300																			
Fluoranthene			206-44-0	10000																			
Indeno(1,2,3-cd)pyrene			193-39-5	3000																			
2-Methylnaphthalene			91-57-6	5000																			
Naphthalene			91-20-3	10000																			
Phenanthrene			85-01-8	10000																			
Pyrene			129-00-0	10000																			
Polychlorinated Biphenyls (PCBs)																							
Aroclor 1242	3540C/8082	mg/kg	53469-21-9	NE	2.9 CP+	< 0.05	1.1 CP+	< 0.06	3.0	< 0.06	2.1 CP+	< 0.05	1.0 CP+	< 0.05	< 2.9	< 0.06	< 5.4	< 0.06	< 3.0	< 0.06	18.7 P+	1.3 G	
Aroclor 1254			11097-69-1	NE	4.0 CP+	< 0.05	3.9 CP+	< 0.06	< 1.1	< 0.06	4.8 CP+	< 0.05	4.1 CP+	< 0.05	26.5 P+	< 0.06	38.1 P+	< 0.06	18.4 P+	< 0.06	17.9 P+	< 0.05	
Aroclor 1260			11096-82-5	NE	2.2 CP+	0.2 P+	3.4 CP+	0.06	15.9	0.3	3.3 CP+	0.3 P+	3.5 CP+	0.5 P+	30.2 P+	0.2 P+	48.5 P+	0.3 P+	23.9 P+	0.6 P+	9.7 P+	0.8 P+	
Aroclor 1268			11100-14-4	NE	< 0.07	0.1 P+	< 0.06	< 0.06	< 1.1	< 0.06	< 0.06	0.1 P+	< 0.06	0.1 P+	< 2.9	0.1 P+	< 5.4	0.3 P+	< 3.0	0.2 P+	< 1.1	0.3 P+	
Total PCBs Aroclors			1336-36-3	100	9.1	0.3	8.4	0.06	18.9	0.3	10.2	0.4	8.6	0.6	56.7	0.3	86.6	0.6	42.3	0.8	46.3	2.4	
Metals																							
Arsenic	6010	mg/kg	7440-38-2	500	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Barium	6010		7440-39-3	10000																			
Cadmium	6010		7440-43-9	1000																			
Chromium	6010		7440-47-3	2000																			
Lead	6010		7439-92-1	6000																			
Mercury	7471		7439-97-6	300																			
Selenium	6020		7782-49-2	7000																			
Silver	6010		7440-22-4	2000																			
Zinc	6010		7440-66-6	10000																			

Notes:

- Only analytes detected in at least one sample are shown.
- < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
- Bolding indicates a detected result concentration
- Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
- mg/kg = milligrams/kilogram or parts per million (ppm)
- EPH = Extractable Petroleum Hydrocarbon
- UCL = MCP Upper Concentration Limits
- CAS No. = Chemical Abstracts Service Number
- NE = Not Established
- ND = not detected

Validators Qualifiers

- C = Results confirmed by re-analysis
- C+ = The result has a high bias due to surrogate recovery above upper control limits.
- C- = The result has a low bias due to surrogate recovery below lower control limits.
- F+ = The result has a high bias due to matrix spike recovery above upper control limits.
- F- = The result has a low bias due to matrix spike recovery below lower control limits.
- G = The result is estimated due to duplicate precision outside control limits.
- K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
- P = The result is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					BBERM-10E	BBERM-10W	BBERM-11E	BBERM-11W	BBERM-12E	BBERM-12W	BBERM-13E	BBERM-13W	BBERM-14E	BBERM-14W	BBERM-15E	BBERM-15W	BBERM-16E	BBERM-16W	BBERM-17E	BBERM-17W	BBERM-18E	BBERM-18W		
Sample Name					BBerm-10E 0-1	BBerm-10W 0-1	BBerm-11E 0-1	BBerm-11W 0-1	BBerm-12E 0-1	BBerm-12W 0-1	BBerm-13E 0-1	BBerm-13W 0-1	BBerm-14E 0-1	BBerm-14W 0-1	BBerm-15E 0-1	BBerm-15W 0-1	BBerm-16E 0-1	BBerm-16W 0-1	BBerm-17E 0-1	BBerm17W 0-1	BBerm-18E 0-1	BBerm-18W 0-1		
Start Depth					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
End Depth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
Sample Date					9/11/2019	7/31/2019	9/16/2019	7/31/2019	9/16/2019	8/1/2019	9/16/2019	8/1/2019	9/13/2019	8/1/2019	9/13/2019	8/2/2019	9/13/2019	8/2/2019	9/13/2019	8/5/2019	9/13/2019	8/5/2019	8/5/2019	
Parent Sample																								
Analyte	Method	Units	CAS No.	MCP UCLs																				
EPH Compounds																								
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT			
C11-C22 Aromatics			EPH1122	10000																				
C19-C36 Aliphatics			EPH1936	20000																				
Acenaphthene			83-32-9	10000																				
Acenaphthylene			208-96-8	10000																				
Anthracene			120-12-7	10000																				
Benzo(a)anthracene			56-55-3	3000																				
Benzo(b)fluoranthene			205-99-2	3000																				
Benzo(k)fluoranthene			207-08-9	10000																				
Benzo(g,h,i)perylene			191-24-2	10000																				
Benzo(a)pyrene			50-32-8	300																				
Chrysene			218-01-9	10000																				
Dibenz(a,h)anthracene			53-70-3	300																				
Fluoranthene			206-44-0	10000																				
Indeno(1,2,3-cd)pyrene			193-39-5	3000																				
2-Methylnaphthalene			91-57-6	5000																				
Naphthalene			91-20-3	10000																				
Phenanthrene			85-01-8	10000																				
Pyrene			129-00-0	10000																				
Polychlorinated Biphenyls (PCBs)																								
Aroclor 1242	3540C/8082	mg/kg	53469-21-9	NE	0.2	1.2 CP+	< 0.06	0.5 P+	< 0.05	0.7 P+	< 0.05	0.1 P+	0.2 P+	35.6	< 0.07	5.2 P+	0.5 P+	0.5 P+	< 0.05	1.5 P+	< 0.06	2.3 P+		
Aroclor 1254			11097-69-1	NE	< 0.06	4.4 CP+	< 0.06	2.6 P+	< 0.05	2.4 P+	< 0.05	0.7 P+	0.6 P+	< 2.3	< 0.07	10.3 P+	0.3 P+	3.2 P+	< 0.05	9.6 P+	< 0.06	15.3 P+		
Aroclor 1260			11096-82-5	NE	5.3 P+	2.5 CP+	< 0.06	1.6 P+	0.1 P+	1.1 P+	0.3 P+	0.9 P+	0.9 P+	< 2.3	0.7	1.6 P+	0.7 P+	4.3 P+	0.08	9.1 P+	0.3	18.9 P+		
Aroclor 1268			11100-14-4	NE	1.0 P+	< 0.06	0.3	< 0.05	0.07 P+	< 0.05	0.1 P+	< 0.05	0.3 P+	< 2.3	< 0.07	< 1.0	< 0.06	< 0.06	< 0.05	< 1.1	< 0.06	< 1.1		
Total PCBs Aroclors			1336-36-3	100	6.5	8.1	0.3	4.7	0.17	4.2	0.4	1.7	2	35.6	0.7	17.1	1.5	8	0.08	20.2	0.3	36.5		
Metals																								
Arsenic	6010	mg/kg	7440-38-2	500	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
Barium	6010		7440-39-3	10000																				
Cadmium	6010		7440-43-9	1000																				
Chromium	6010		7440-47-3	2000																				
Lead	6010		7439-92-1	6000																				
Mercury	7471		7439-97-6	300																				
Selenium	6020		7782-49-2	7000																				
Silver	6010		7440-22-4	2000																				
Zinc	6010		7440-66-6	10000																				

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 - P = The result is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
Former Tombarello Site
Lawrence, Massachusetts

Location Name	Sample Name	Start Depth	End Depth	Depth Unit	Sample Date	BBERM-19E	BBERM-19W	MBERM-01N	MBERM-01N	MBERM-01S	MBERM-02N	MBERM-02S	MBERM-03N	MBERM-03S	MBERM-04N	MBERM-04S	MBERM-05N	MBERM-05S	MBERM-06N	MBERM-06S	MBERM-07N	MBERM-07S
						BBerm-19E 0-1	BBerm-19W 0-1	MBerm-01N 5-6	FD-01	MBerm-01S 5-6	MBerm-02N 5-6	MBerm-02S 5-6	MBerm-03N 4-5	MBerm-03S 5-6	MBerm-04N 5-6	MBerm-04S 5-6	MBerm-05N 5-6	MBerm-05S 5-6	MBerm-06N 4-5	MBerm-06S 5-6	MBerm-07N 5-6	MBerm-07S 5-6
		0	0			5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5
		1	1			6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	6
		ft	ft			ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
		9/13/2019	8/5/2019	7/30/2019		7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/30/2019	9/10/2019	7/31/2019	9/11/2019	8/1/2019	9/11/2019	
Parent Sample					1802441-MBERM-01N 5-6																	
Analyte	Method	Units	CAS No.	MCP UCLs																		
EPH Compounds					MA EPH	mg/kg		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			EPH918	20000																		
C11-C22 Aromatics			EPH1122	10000																		
C19-C36 Aliphatics			EPH1936	20000																		
Acenaphthene			83-32-9	10000																		
Acenaphthylene			208-96-8	10000																		
Anthracene			120-12-7	10000																		
Benzo(a)anthracene			56-55-3	3000																		
Benzo(b)fluoranthene			205-99-2	3000																		
Benzo(k)fluoranthene			207-08-9	10000																		
Benzo(g,h,i)perylene			191-24-2	10000																		
Benzo(a)pyrene			50-32-8	300																		
Chrysene			218-01-9	10000																		
Dibenz(a,h)anthracene			53-70-3	300																		
Fluoranthene			206-44-0	10000																		
Indeno(1,2,3-cd)pyrene			193-39-5	3000																		
2-Methylnaphthalene			91-57-6	5000																		
Naphthalene			91-20-3	10000																		
Phenanthrene			85-01-8	10000																		
Pyrene			129-00-0	10000																		
Polychlorinated Biphenyls (PCBs)					3540C/8082	mg/kg																
Aroclor 1242			53469-21-9	NE	< 0.06	< 1.1	0.7 C+	0.9 C+	< 1.1	3.1	< 0.05	3.6	< 0.06	1.6 G	< 0.06	5.7 CP+	< 0.06	< 6.0	< 1.0	< 5.4	0.1	
Aroclor 1254			11097-69-1	NE	0.5 P+	< 1.1	< 0.06	< 0.07	11.4 P+	< 1.2	< 0.05	< 1.1	< 0.06	< 1.2	1.9 P+	8.2 CP+	< 0.06	50.6 P+	11.2 P+	38.2 P+	< 0.05	
Aroclor 1260			11096-82-5	NE	0.4 P+	14.3	4.2 C+	2.9 C+	14.8 P+	21.5	0.4 P+	18.7	0.1 P+	15.9	2.3 P+	6.1 CP+	0.6 P+	47.1 P+	12.4 P+	52.7 P+	0.7 P+	
Aroclor 1268			11100-14-4	NE	< 0.06	< 1.1	< 0.06	< 0.07	2.6 P+	< 1.2	0.2 P+	< 1.1	0.09 P+	< 1.2	0.5 P+	< 0.06	0.4 P+	< 6.0	2.3 P+	< 5.4	0.3 P+	
Total PCBs Aroclors			1336-36-3	100	0.9	14.3	4.9	3.8	28.8	24.6	0.6	22.3	0.19	17.5	4.7	20	1	97.7	25.9	90.9	1.1	
Metals						mg/kg	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010		7440-38-2	500																		
Barium	6010		7440-39-3	10000																		
Cadmium	6010		7440-43-9	1000																		
Chromium	6010		7440-47-3	2000																		
Lead	6010		7439-92-1	6000																		
Mercury	7471		7439-97-6	300																		
Selenium	6020		7782-49-2	7000																		
Silver	6010		7440-22-4	2000																		
Zinc	6010		7440-66-6	10000																		

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Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					MBERM-08N	MBERM-08N	MBERM-08S	MBERM-09N	MBERM-09N	MBERM-09S	MBERM-10E	MBERM-10W	MBERM-11E	MBERM-11W	MBERM-12E	MBERM-12W	MBERM-12W	MBERM-13E	MBERM-13W	MBERM-14E
Sample Name					MBerm-08N 5-6	FD-03	MBerm-08S 5-6	MBerm-09N 5-6	FD-05	MBerm-09S 5-6	MBerm-10E 5-6	MBerm-10W 5-6	MBerm-11E 5-6	MBerm-11W 5-6	MBerm-12E 5-6	MBerm-12W 5-6	FD-06	MBerm-13E 5-6	MBerm-13W 5-6	MBerm-14E 5-6
Start Depth					5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
End Depth					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					7/31/2019	7/31/2019	9/11/2019	8/1/2019	8/1/2019	9/11/2019	9/11/2019	7/31/2019	9/16/2019	7/31/2019	9/16/2019	8/1/2019	8/1/2019	9/16/2019	8/1/2019	9/13/2019
Parent Sample						1802441-MBERM-08N 5-6			1802441-MBERM-09N 5-6								1802441-MBERM-12W 5-6			
Analyte	Method	Units	CAS No.	MCP UCLs																
EPH Compounds	MA EPH	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	
C9-C18 Aliphatics			EPH918	20000												< 84.3	< 181			
C11-C22 Aromatics			EPH1122	10000												166	205			
C19-C36 Aliphatics			EPH1936	20000												271	485			
Acenaphthene			83-32-9	10000												< 2.25	6.71			
Acenaphthylene			208-96-8	10000												< 0.39	< 0.84			
Anthracene			120-12-7	10000												< 2.25	< 4.83			
Benzo(a)anthracene			56-55-3	3000												2.81	5.92			
Benzo(b)fluoranthene			205-99-2	3000												2.53	< 4.83			
Benzo(k)fluoranthene			207-08-9	10000												2.38	< 4.83			
Benzo(g,h,i)perylene			191-24-2	10000												< 2.25	< 4.83			
Benzo(a)pyrene			50-32-8	300												2.61	5.66			
Chrysene			218-01-9	10000												2.87	6.13			
Dibenz(a,h)anthracene			53-70-3	300												0.73	0.99			
Fluoranthene			206-44-0	10000												5.78	14.2			
Indeno(1,2,3-cd)pyrene			193-39-5	3000												< 2.25	< 4.83			
2-Methylnaphthalene			91-57-6	5000												< 0.39 G	3.30 G			
Naphthalene			91-20-3	10000												< 2.25	9.26			
Phenanthrene			85-01-8	10000												4.38 G	15.5 G			
Pyrene			129-00-0	10000												5.20	12.3			
Polychlorinated Biphenyls (PCBs)	3540C/8082	mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	
Aroclor 1242			53469-21-9	NE	< 3.0	< 2.8	< 0.05	0.8 GP	0.4 GP	0.1 G	0.2 G	3.2 P+	< 0.06	2.4 P+	< 0.06	3.5 GP	< 0.06	0.6 P+	< 0.06	
Aroclor 1254			11097-69-1	NE	15.4 P+	23.3 P+	< 0.05	0.4 P+	0.2 P+	< 0.05	< 0.06	7.3 P+	< 0.06	7.6 P+	< 0.06	6.1 P+	< 0.06	2.5 P+	< 0.06	
Aroclor 1260			11096-82-5	NE	21.7 P+	30.4 P+	0.6 P+	0.4 P+	0.3 P+	0.8 P+	0.4 P+	9.9 P+	< 0.06	3.9 P+	< 0.06	4.2 P+	0.2 P+	3.0 P+	< 0.06	
Aroclor 1268			11100-14-4	NE	< 3.0	< 2.8	0.3 P+	0.3 P+	0.3 P+	0.3 P+	0.5 P+	< 1.2	0.2	< 0.06	0.2	< 0.06	0.3 P+	< 0.06	< 0.06	
Total PCBs Aroclors			1336-36-3	100	37.1	53.7	1.2	1.9	1.2	1.2	1.1	20.4	0.2	13.9	0.2	13.8	0.5	6.1	ND	
Metals		mg/kg			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	
Arsenic	6010		7440-38-2	500												< 13.2 FG	< 8.05			
Barium	6010		7440-39-3	10000												290	276			
Cadmium	6010		7440-43-9	1000												11.4 FG	10.8			
Chromium	6010		7440-47-3	2000												902 G	633			
Lead	6010		7439-92-1	6000												876	902 K-			
Mercury	7471		7439-97-6	300												2.66	2.99			
Selenium	6020		7782-49-2	7000												1.22	0.98			
Silver	6010		7440-22-4	2000												0.68 FGK	3.01 GK			
Zinc	6010		7440-66-6	10000												1610 G	2190			

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 G = The result is estimated due to duplicate precision outside control limits.
 K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
 P = The result is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
Former Tombarello Site
Lawrence, Massachusetts

Location Name					MBERM-14W	MBERM-15E	MBERM-15W	MBERM-15WN	MBERM-15WS	MBERM-16E	MBERM-16W	MBERM-17E	MBERM-17W	MBERM-18E	MBERM-18W	MBERM-19E	MBERM-19E	MBERM-19W	MBERM-19W	TBERM-01	TBERM-01
Sample Name					MBerm-14W 5-6	MBerm-15E 5-6	MBerm-15W 5-6	MBerm-15WN 5-6	MBerm-15WS 5-6	MBerm-16E 5-6	MBerm-16W 5-6	MBerm-17E 5-6	MBerm-17W 5-6	MBerm-18E 5-6	MBerm-18W 5-6	MBerm-19E 5-6	FD-22	MBerm-19W 5-6	FD-19	TBerm-01 0-1	TBerm-01 3-4
Start Depth					5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	3
End Depth					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	1	4
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					8/1/2019	9/13/2019	8/2/2019	9/11/2019	9/11/2019	9/13/2019	8/2/2019	9/13/2019	8/5/2019	9/13/2019	8/5/2019	9/13/2019	9/13/2019	8/5/2019	8/5/2019	7/31/2019	7/31/2019
Parent Sample																1802441-MBERM-19E 5-6		1802441-MBERM-19W 5-6			
Analyte	Method	Units	CAS No.	MCP UCLs																	
EPH Compounds					NT	NT		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000			131								< 204						
C11-C22 Aromatics			EPH1122	10000			567								549						
C19-C36 Aliphatics			EPH1936	20000			1140								409						
Acenaphthene			83-32-9	10000			< 2.43								< 5.45						
Acenaphthylene			208-96-8	10000			< 1.22								< 2.72						
Anthracene			120-12-7	10000			< 2.43								< 5.45						
Benzo(a)anthracene			56-55-3	3000			4.89								13.7						
Benzo(b)fluoranthene			205-99-2	3000			6.96								17.1						
Benzo(k)fluoranthene			207-08-9	10000			< 2.43								7.11						
Benzo(g,h,i)perylene			191-24-2	10000			2.53								7.01						
Benzo(a)pyrene			50-32-8	300			4.10								12.3						
Chrysene			218-01-9	10000			4.57								14.6						
Dibenz(a,h)anthracene			53-70-3	300			< 1.22								2.82						
Fluoranthene			206-44-0	10000			9.41								28.7						
Indeno(1,2,3-cd)pyrene			193-39-5	3000			3.39								9.01						
2-Methylnaphthalene			91-57-6	5000			< 1.22								< 2.72						
Naphthalene			91-20-3	10000			< 2.43								11.8						
Phenanthrene			85-01-8	10000			7.17								21.8						
Pyrene			129-00-0	10000			8.35								24.3						
Polychlorinated Biphenyls (PCBs)					3540C/8082	mg/kg															
Aroclor 1242			53469-21-9	NE	0.6 P+	< 0.06	11.8 P+	< 12.2	< 0.06	0.08 P+	< 2.9	0.3 P+	15.3 P+	0.3 P+	33.6 P+	< 0.05	0.1 P+	< 0.05	0.09	< 2.8	< 2.7
Aroclor 1254			11097-69-1	NE	2.7 P+	0.3 P+	52.4 P+	94.2 P+	2.7 P+	0.2 P+	21.1 P+	1.3 P+	14.6 P+	2.7 P+	23.4 P+	0.3 P+	0.3 P+	< 0.05	< 0.05	25.2 P+	22.8 P+
Aroclor 1260			11096-82-5	NE	3.8 P+	0.3 P+	56.6 P+	145 P+	2.8 P+	0.2 P+	29.6 P+	0.7 P+	10.9 P+	0.7 P+	23.7 P+	0.3 P+	0.5 P+	0.3	0.4	28.5 P+	27.7 P+
Aroclor 1268			11100-14-4	NE	< 0.06	0.2 P+	< 6.1	< 12.2	0.5 P+	< 0.05	< 2.9	0.3 P+	< 1.1	0.2 P+	< 2.7	< 0.05	< 0.05	< 0.05	< 0.05	< 2.8	< 2.7
Total PCBs Aroclors			1336-36-3	100	7.1	0.8	120.8	239.2	6	0.48	50.7	2.6	40.8	3.9	80.7	0.6	0.9	0.3	0.49	53.7	50.5
Metals						mg/kg															
Arsenic	6010		7440-38-2	500			6.23								16.3						
Barium	6010		7440-39-3	10000			559								229						
Cadmium	6010		7440-43-9	1000			17.6								79.7						
Chromium	6010		7440-47-3	2000			101								123						
Lead	6010		7439-92-1	6000			1390 K-								5410						
Mercury	7471		7439-97-6	300			4.31								4.87						
Selenium	6020		7782-49-2	7000			1.11								< 0.58						
Silver	6010		7440-22-4	2000			1.98 K-								2.35						
Zinc	6010		7440-66-6	10000			3250								3220						

- Notes:**
- Only analytes detected in at least one sample are shown.
 - < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 - Bolding indicates a detected result concentration
 - Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 - mg/kg = milligrams/kilogram or parts per million (ppm)
 - EPH = Extractable Petroleum Hydrocarbon
 - UCL = MCP Upper Concentration Limits
 - CAS No. = Chemical Abstracts Service Number
 - NE = Not Established
 - ND = not detected

- Validators Qualifiers**
- C = Results confirmed by re-analysis
 - C+ = The result has a high bias due to surrogate recovery above upper control limits.
 - C- = The result has a low bias due to surrogate recovery below lower control limits.
 - F+ = The result has a high bias due to matrix spike recovery above upper control limits.
 - F- = The result has a low bias due to matrix spike recovery below lower control limits.
 - G = The result is estimated due to duplicate precision outside control limits.
 - K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
 - P = The result is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					TBERM-02	TBERM-02	TBERM-03	TBERM-03	TBERM-04	TBERM-04	TBERM-04	TBERM-05	TBERM-05	TBERM-06	TBERM-06	TBERM-07	TBERM-07	TBERM-08	TBERM-08	TBERM-09	TBERM-09	TBERM-10	TBERM-10	TBERM-11
Sample Name					TBerm-02 0-1	TBerm-02 3-4	TBerm-03 0-1	TBerm-03 3-4	TBerm-04 0-1	TBerm-04 3-4	FD-02	TBerm-05 0-1	TBerm-05 3-4	TBerm-06 0-1	TBerm-06 3-4	TBerm-07 0-1	TBerm-07 3-4	TBerm-08 0-1	TBerm-08 3-4	TBerm-09 0-1	TBerm-09 3-4	TBerm-10 0-1	TBerm-10 3-4	TBerm-11 0-1
Start Depth					0	3	0	3	0	3	3	0	3	0	3	0	3	0	3	0	3	0	3	0
End Depth					1	4	1	4	1	4	4	1	4	1	4	1	4	1	4	1	4	1	4	1
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	7/31/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019
Parent Sample					1802441-TBERM-04 3-4																			
Analyte	Method	Units	CAS No.	MCP UCLs																				
EPH Compounds					NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000																				
C11-C22 Aromatics			EPH1122	10000																				
C19-C36 Aliphatics			EPH1936	20000																				
Acenaphthene			83-32-9	10000																				
Acenaphthylene			208-96-8	10000																				
Anthracene			120-12-7	10000																				
Benzo(a)anthracene			56-55-3	3000																				
Benzo(b)fluoranthene			205-99-2	3000																				
Benzo(k)fluoranthene			207-08-9	10000																				
Benzo(g,h,i)perylene			191-24-2	10000																				
Benzo(a)pyrene			50-32-8	300																				
Chrysene			218-01-9	10000																				
Dibenz(a,h)anthracene			53-70-3	300																				
Fluoranthene			206-44-0	10000																				
Indeno(1,2,3-cd)pyrene			193-39-5	3000																				
2-Methylnaphthalene			91-57-6	5000																				
Naphthalene			91-20-3	10000																				
Phenanthrene			85-01-8	10000																				
Pyrene			129-00-0	10000																				
Polychlorinated Biphenyls (PCBs)																								
Aroclor 1242	3540C/8082	mg/kg	53469-21-9	NE	< 2.9	< 2.9	< 2.9	< 1.1	< 2.8	< 5.6	< 5.7	< 5.7	< 5.8	< 2.7	< 2.9	< 1.1	< 2.7	< 1.2	< 2.8	3.4 GP	20.4 P+	0.3 P+	0.6 P+	0.6 P+
Aroclor 1254			11097-69-1	NE	24.7 P+	16.3 P+	19.3 P+	9.3 P+	25.3 P+	36.4 P+	36.2 P+	46.9 P+	50.2 P+	30.6 P+	26.9 P+	7.8 P+	28.0 P+	7.6 P+	17.0 P+	3.1 P+	15.1 P+	1.7 P+	3.0 P+	3.5 P+
Aroclor 1260			11096-82-5	NE	33.1 P+	22.4 P+	24.9 P+	10.8 P+	33.9 P+	52.7 P+	51.0 P+	75.4 P+	67.6 P+	40.1 P+	32.2 P+	10.9 P+	37.7 P+	11.6 P+	26.5 P+	2.2 P+	4.0 P+	1.8 P+	2.9 P+	4.3 P+
Aroclor 1268			11100-14-4	NE	< 2.9	< 2.9	< 2.9	< 1.1	< 2.8	< 5.6	< 5.7	< 5.8	< 2.7	< 2.9	< 1.1	< 2.7	< 1.2	< 2.8	0.6 P+	< 2.7	< 0.05	< 0.06	< 0.06	< 0.06
Total PCBs Aroclors			1336-36-3	100	57.8	38.7	44.2	20.1	59.2	89.1	87.2	122.3	117.8	70.7	59.1	18.7	65.7	19.2	43.5	9.3	39.5	3.8	6.5	8.4
Metals					NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Arsenic	6010	mg/kg	7440-38-2	500																				
Barium	6010		7440-39-3	10000																				
Cadmium	6010		7440-43-9	1000																				
Chromium	6010		7440-47-3	2000																				
Lead	6010		7439-92-1	6000																				
Mercury	7471		7439-97-6	300																				
Selenium	6020		7782-49-2	7000																				
Silver	6010		7440-22-4	2000																				
Zinc	6010		7440-66-6	10000																				

- Notes:**
- Only analytes detected in at least one sample are shown.
 - < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
 - Bolding indicates a detected result concentration
 - Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
 - mg/kg = milligrams/kilogram or parts per million (ppm)
 - EPH = Extractable Petroleum Hydrocarbon
 - UCL = MCP Upper Concentration Limits
 - CAS No. = Chemical Abstracts Service Number
 - NE = Not Established
 - ND = not detected

- Validators Qualifiers**
- C = Results confirmed by re-analysis
 - C+ = The result has a high bias due to surrogate recovery above upper control limits.
 - C- = The result has a low bias due to surrogate recovery below lower control limits.
 - F+ = The result has a high bias due to matrix spike recovery above upper control limits.
 - F- = The result has a low bias due to matrix spike recovery below lower control limits.
 - G = The result is estimated due to duplicate precision outside control limits.
 - K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
 - P = The result is estimated due to the presence of another Aroclor pattern.

Table 12. Chemical Testing Results - Berm Soil Samples (2019 Investigation)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					TBERM-11	TBERM-12	TBERM-12	TBERM-13	TBERM-13	TBERM-14	TBERM-14	TBERM-15	TBERM-15	TBERM-15	TBERM-16	TBERM-16	TBERM-17	TBERM-17	TBERM-17	TBERM-18	TBERM-18	TBERM-19	TBERM-19				
Sample Name					TBerm-11 3-4	TBerm-12 0-1	TBerm-12 3-4	TBerm-13 0-1	TBerm-13 3-4	TBerm-14 0-1	TBerm-14 3-4	TBerm-15 0-1	FD-08	TBerm-15 3-4	TBerm-16 0-1	TBerm-16 3-4	TBerm-17 0-1	FD-20	TBerm-17 3-4	TBerm-18 0-1	TBerm-18 3-4	TBerm-19 0-1	TBerm-19 3-4				
Start Depth					3	0	3	0	3	0	3	0	0	3	0	3	0	0	3	0	3	0	3				
End Depth					4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4				
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft				
Sample Date					8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019				
Parent Sample																	1802441-TBERM-15 0-1										
Analyte	Method	Units	CAS No.	MCP UCLs																							
EPH Compounds					NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT				
C9-C18 Aliphatics	MA EPH	mg/kg	EPH918	20000																							
C11-C22 Aromatics			EPH1122	10000																							
C19-C36 Aliphatics			EPH1936	20000																							
Acenaphthene			83-32-9	10000																							
Acenaphthylene			208-96-8	10000																							
Anthracene			120-12-7	10000																							
Benzo(a)anthracene			56-55-3	3000																							
Benzo(b)fluoranthene			205-99-2	3000																							
Benzo(k)fluoranthene			207-08-9	10000																							
Benzo(g,h,i)perylene			191-24-2	10000																							
Benzo(a)pyrene			50-32-8	300																							
Chrysene			218-01-9	10000																							
Dibenz(a,h)anthracene			53-70-3	300																							
Fluoranthene			206-44-0	10000																							
Indeno(1,2,3-cd)pyrene			193-39-5	3000																							
2-Methylnaphthalene			91-57-6	5000																							
Naphthalene			91-20-3	10000																							
Phenanthrene			85-01-8	10000																							
Pyrene			129-00-0	10000																							
Polychlorinated Biphenyls (PCBs)																											
Aroclor 1242	3540C/8082	mg/kg	53469-21-9	NE	1.7 P+	0.6 P+	0.6 P+	0.1 P+	0.5 P+	0.3 P+	0.3 P+	< 2.9	< 2.9	5.8 P+	2.8 P+	4.4 P+	0.1 P+	0.07 P+	< 2.3	< 1.1	2.3 P+	< 0.05 C-	< 0.06				
Aroclor 1254			11097-69-1	NE	3.1 P+	3.4 P+	2.8 P+	0.7 P+	3.7 P+	2.7 P+	3.0 P+	21.3 P+	29.2 P+	58.7 P+	7.2 P+	20.3 P+	0.6 P+	0.9 P+	24.5 P+	13.5 P+	13.4 P+	< 0.05 C-	< 0.06				
Aroclor 1260			11096-82-5	NE	2.5 P+	2.6 P+	3.0 P+	1.6 P+	4.4 P+	3.7 P+	4.3 P+	27.6 P+	31.8 P+	64.1 P+	0.9 P+	25.0 P+	0.8 P+	1.0 P+	31.4 P+	19.7 P+	15.0 P+	0.2 C-	0.2				
Aroclor 1268			11100-14-4	NE	< 0.05	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 2.9	< 2.9	< 5.4	< 0.05	< 2.1	< 0.05	< 0.05	< 2.3	< 1.1	< 1.1	< 0.05 C-	< 0.06				
Total PCBs Aroclors			1336-36-3	100	7.3	6.6	6.4	2.4	8.6	6.7	7.6	48.9	61	128.6	10.9	49.7	1.5	1.97	55.9	33.2	30.7	0.2	0.2				
Metals					NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT				
Arsenic	6010	mg/kg	7440-38-2	500																							
Barium	6010		7440-39-3	10000																							
Cadmium	6010		7440-43-9	1000																							
Chromium	6010		7440-47-3	2000																							
Lead	6010		7439-92-1	6000																							
Mercury	7471		7439-97-6	300																							
Selenium	6020		7782-49-2	7000																							
Silver	6010		7440-22-4	2000																							
Zinc	6010		7440-66-6	10000																							

- Notes:**
- Only analytes detected in at least one sample are shown.
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 - Bolding indicates a detected result concentration
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 - mg/kg = milligrams/kilogram or parts per million (ppm)
 - EPH = Extractable Petroleum Hydrocarbon
 - UCL = MCP Upper Concentration Limits
 - CAS No. = Chemical Abstracts Service Number
 - NE = Not Established
 - ND = not detected

- Validators Qualifiers**
- C = Results confirmed by re-analysis
 - C+ = The result has a high bias due to surrogate recovery above upper control limits.
 - C- = The result has a low bias due to surrogate recovery below lower control limits.
 - F+ = The result has a high bias due to matrix spike recovery above upper control limits.
 - F- = The result has a low bias due to matrix spike recovery below lower control limits.
 - G = The result is estimated due to duplicate precision outside control limits.
 - K- = The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
 - P = The result is estimated due to the presence of another Aroclor pattern.

Table 13. Summary of Chemical Testing Results - Soil Pile Soil Samples (2019 Investigations)
 Former Tombarello Site
 Lawrence, Massachusetts

					SP01-1	SP01-1	SP01-2	SP01-3	SP03-1	SP03-2	SP03-3	SP04-1	SP04-2	SP04-3	SP05-1	SP05-2
					SP01-1 4-5	FD-15	SP01-2 3-4	SP01-3 2-3	SP03-1 3-4	SP03-2 4-5	SP03-3 2-3	SP04-1 3-4	SP04-2 4-5	SP04-3 2-3	SP05-1 2-3	SP05-2 3-4
					4	4	3	2	3	4	2	3	4	2	2	3
					5	5	4	3	4	5	3	4	5	3	3	4
					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					8/7/2019	8/7/2019	8/7/2019	8/7/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019
					SP01-1 4-5	SP01-1 4-5										
Analyte	Method	Units	CAS No.	MCP UCL												
Polychlorinated Biphenyls (PCBs)	3540C/8082	mg/kg														
Aroclor 1242			53469-21-9	NE	0.1 CG	< 0.07	0.4 CGP	8.3 CP+	1.1 P+	2.2 P+	< 1.1	0.6 P+	1.1 P+	0.6 CP+	0.8 P+	0.9 GP
Aroclor 1254			11097-69-1	NE	< 0.05	< 0.07	2.8 CP+	4.9 CP+	4.7 P+	10.2 P+	9.7 P+	5.4 P+	5.8 P+	3.9 CP+	1.4 P+	1.9 GP
Aroclor 1260			11096-82-5	NE	1.9 CG	< 0.07 G	2.7 CP+	2.9 CP+	1.8 P+	3.3 P+	3.3 P+	2.6 P+	1.7 P+	1.8 CP+	1.0 P+	1.4 GP
Total PCBs Aroclors			1336-36-3	100	2	ND	5.9	16.1	7.6	15.7	13	8.6	8.6	6.3	3.2	4.2

Notes:

1. Only analytes detected in at least one sample are shown.
2. < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. Bolding indicates a detected result concentration
4. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
5. mg/kg = milligrams/kilogram or parts per million (ppm)
6. UCL = MCP Upper Concentration Limits
7. CAS No. = Chemical Abstracts Service Number
8. NE = Not Established
9. ND = Not Detected

Validators Qualifiers

- C = Results confirmed by re-analysis
- G = The result is estimated due to duplicate precision outside control limits.
- P = The result is estimated due to the presence of another Aroclor pattern.

Table 13. Summary of Chemical Testing Results - Soil Pile Soil Samples (2019 Investigations)
 Former Tombarello Site
 Lawrence, Massachusetts

					Location Name	SP05-2	SP05-3	SP06-1	SP06-2	SP06-3	SP07-1	SP07-2	SP07-3	SP07-3	SP08-1	SP08-2	SP08-3
					Sample Name	FD-10	SP05-3 1-2	SP06-1 3-4	SP06-2 4-5	SP06-3 2-3	SP07-1 4-5	SP07-2 3-4	SP07-3 2-3	DUP-13	SP08-1 2-3	SP08-2 3-4	SP08-3 4-5
					Start Depth	3	1	3	4	2	4	2	2	2	2	3	4
					End Depth	4	2	4	5	3	5	4	3	3	3	4	5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019
					Parent Sample	SP05-2 3-4								SP07-3 2-3			
Analyte	Method	Units	CAS No.	MCP UCL													
Polychlorinated Biphenyls (PCBs)	3540C/8082	mg/kg															
Aroclor 1242			53469-21-9	NE	4.0 GP	1.8 P+	0.2 P+	0.2 P+	0.1 P+	0.5 CP+	0.3 CP+	< 1.0	0.3	2.4 CP+	2.6 CP+	3.1 CP+	
Aroclor 1254			11097-69-1	NE	3.8 GP	2.7 P+	0.6 P+	0.4 P+	0.4 P+	1.9 CP+	1.8 CP+	< 1.0	< 0.05	4.4 CP+	4.5 CP+	5.0 CP+	
Aroclor 1260			11096-82-5	NE	3.2 GP	2.0 P+	0.5 P+	0.4 P+	0.4 P+	1.8 CP+	1.4 CP+	11.1	8.3	2.0 CP+	3.4 CP+	4.1 CP+	
Total PCBs Aroclors			1336-36-3	100	11	6.5	1.3	1	0.9	4.2	3.5	11.1	8.6	8.8	10.5	12.2	

Notes:

1. Only analytes detected in at least one sample are shown.
2. < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. Bolding indicates a detected result concentration
4. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
5. mg/kg = milligrams/kilogram or parts per million (ppm)
6. UCL = MCP Upper Concentration Limits
7. CAS No. = Chemical Abstracts Service Number
8. NE = Not Established
9. ND = Not Detected

Validators Qualifiers

- C = Results confirmed by re-analysis
- G = The result is estimated due to duplicate precision outside control limits.
- P = The result is estimated due to the presence of another Aroclor pattern.

Table 13. Summary of Chemical Testing Results - Soil Pile Soil Samples (2019 Investigations)
 Former Tombarello Site
 Lawrence, Massachusetts

Location Name					SP09-1	SP09-2	SP09-3	SP10-1	SP10-2	SP10-3	SP10-4	SP10-5	SP10-6	SP10-7
Sample Name					SP09-1 2-3	SP09-2 3-4	SP09-3 4-5	SP10-1 2-3	SP10-2 3-4	SP10-3 4-5	SP10-4 2-3	SP10-5 3-4	SP10-6 4-5	SP10-7 5-6
Start Depth					2	3	4	2	3	4	2	3	4	5
End Depth					3	4	5	3	4	5	3	4	5	6
Depth Unit					ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date					8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/5/2019	8/1/2019	8/1/2019	8/1/2019	8/1/2019
Parent Sample														
Analyte	Method	Units	CAS No.	MCP UCL										
Polychlorinated Biphenyls (PCBs)	3540C/8082	mg/kg												
Aroclor 1242			53469-21-9	NE	1.7 CP+	1.9 CP+	0.7 P+	1.6 CP+	5.0 CP+	3.2 CP+	7.8 P+	5.6 CP+	3.4 GP	1.1 CP+
Aroclor 1254			11097-69-1	NE	2.5 CP+	2.8 CP+	1.9 P+	3.3 CP+	8.9 CP+	4.8 CP+	11.5 P+	8.8 CP+	13.3 P+	3.5 CP+
Aroclor 1260			11096-82-5	NE	1.5 CP+	1.4 CP+	1.3 P+	2.5 CP+	2.4 CP+	3.4 CP+	4.1 P+	3.4 CP+	4.5 P+	1.6 CP+
Total PCBs Aroclors			1336-36-3	100	5.7	6.1	3.9	7.4	16.3	11.4	23.4	17.8	21.2	6.2

Notes:

1. Only analytes detected in at least one sample are shown.
2. < = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. Bolding indicates a detected result concentration
4. Shading and bolding indicates that the detected concentration is above the UCL it was compared to.
5. mg/kg = milligrams/kilogram or parts per million (ppm)
6. UCL = MCP Upper Concentration Limits
7. CAS No. = Chemical Abstracts Service Number
8. NE = Not Established
9. ND = Not Detected

Validators Qualifiers

- C = Results confirmed by re-analysis
- G = The result is estimated due to duplicate precision outside control limits.
- P = The result is estimated due to the presence of another Aroclor pattern.

Table 14. Concrete Chemical Testing Results – GEI (2019)
Former Tombarello Site
Lawrence, Massachusetts

Location Name Sample Name Start Depth (inches) End Depth (inches) Sample Date Parent Sample				Baler Press Area						East Concrete Pad		Large Shear											
				BPAP-1 BPAP-1A	BPAP-1 BPAP-1B	BPAP-2 BPAP-2A	BPAP-2 BPAP-2B	BPAP-3 BPAP-3A	BPAP-3 BPAP-3B	ECP-2 ECP-2A	ECP-2 ECP-2B	LGSP-1 LGSP-1A	LGSP-1 LGSP-1B	LGSP-2 LGSP-2A	LGSP-2 FD-17	LGSP-2 LGSP-2B	LGSP-3 LGSP-3A	LGSP-3 LGSP-3B	LGSP-4 LGSP-4A	LGSP-4 LGSP-4B	LGSP-5 LGSP-5A	LGSP-5 LGSP-5B	LGSP-6 LGSP-6A
Analyte	Units	CAS No.	MCP UCL																				
EPH Compounds	mg/kg			NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
C9-C18 Aliphatics		EPH918	20000		< 15.0		< 15.7		22.6		18.8		119		< 15.7		< 15.9		< 15.8		< 14.9		< 15.1
C11-C22 Aromatics		EPH1122	10000		< 15.0		52.6		58.7		47.4		35.5		< 15.7		< 15.9		< 15.8		39.6		33.9
C19-C36 Aliphatics		EPH1936	20000		47.3		736		601		675		276		242		< 15.9		159		454		356
Polychlorinated Biphenyls (PCBs)	mg/kg				NT		NT		NT		NT		NT		NT		NT		NT		NT		NT
Aroclor 1242		53469-21-9	NE	0.3		0.3 P+		1.5 P+		0.6		< 0.1	0.2 P+		< 0.1		< 0.09		< 0.1		< 0.1		< 0.1
Aroclor 1254		11097-69-1	NE	< 0.1		0.2 P+		0.7 P+		< 0.1		< 0.1	0.3 P+		< 0.1		< 0.09		< 0.1		0.1 P+		0.1 P+
Aroclor 1260		11096-82-5	NE	0.2		< 0.1		0.2 P+		< 0.1		< 0.1	< 0.1		< 0.1		< 0.09		< 0.1		0.1 P+		0.2 P+
Total PCBs Aroclors		1336-36-3	100	0.5		0.5		2.4		0.6		ND	0.5		ND		ND		ND		0.2		0.3
Metals	mg/kg			NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Arsenic		7440-38-2	500		< 2.33		< 2.42		< 2.35		< 4.91		< 2.32		11.8 F+		< 12.5		< 11.3		5.47		11.9
Barium		7440-39-3	10000		22.7		20.8		23.2		32.6 F-		36.6 F-		81.2 F-		80.3 F-		88.2 F-		56.6		79.7
Chromium		7440-47-3	2000		11.8		9.98		12.0		29.0 F-		27.7 F-		18.7 F-		20.4 F-		25.5 F-		12.4		27.2
Lead		7439-92-1	6000		4.43		4.29		3.72		6.51 F+		5.66 F+		7.78 F+		8.96 F+		4.84 F+		7.44		7.15
Zinc		7440-66-6	10000		29.2		26.3		25.7		28.2 F-		32.0 F-		46.8 F-		41.5 F-		50.3 F-		36.7		37.4

- Notes:**
- All samples were concrete, except SSP-5, which was asphalt.
 - mg/kg = milligrams/kilogram or parts per million (ppm)
 - EPH = Extractable Petroleum Hydrocarbon
 - UCL = MCP Upper Concentration Limits
 - CAS No. = Chemical Abstracts Service Number
 - ND = Not Detected
 - NE = Not Established
 - Bolding indicates a detected result concentration

Validators Qualifiers:
C = Results confirmed by re-analysis
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
P = The result is estimated due to the presence of another Aroclor pattern.

Table 14. Concrete Chemical Testing Results – GEI (2019)
Former Tombarello Site
Lawrence, Massachusetts

Location Name Sample Name Start Depth (inches) End Depth (inches) Sample Date Parent Sample				Small Shear							West Concrete Pad		
				SSP-1 SSP-1A	SSP-1 SSP-1B	SSP-2 SSP-2A	SSP-2 SSP-2B	SSP-3 SSP-3A	SSP-3 SSP-3B	SSP-4 SSP-4A	SSP-4 SSP-4B	SSP-5 SSP-5A	WCP-1 WCP-1A
Analyte	Units	CAS No.	MCP UCL										
EPH Compounds	mg/kg			NT		NT		NT		NT		NT	
C9-C18 Aliphatics		EPH918	20000		< 15.2		< 15.2		26.2		< 15.4		< 15.7
C11-C22 Aromatics		EPH1122	10000		< 15.2		< 15.2		40.9		< 15.4		< 15.7
C19-C36 Aliphatics		EPH1936	20000		28.2		134		534		< 15.4		21.5
Polychlorinated Biphenyls (PCBs)	mg/kg				NT		NT		NT		NT		NT
Aroclor 1242		53469-21-9	NE	< 0.1 C-		< 0.1		0.3 P+		< 0.1		0.07 P+	< 0.1
Aroclor 1254		11097-69-1	NE	< 0.1 C-		< 0.1		0.2 P+		< 0.1		0.2 P+	0.1
Aroclor 1260		11096-82-5	NE	< 0.1 C-		0.2		0.1 P+		< 0.1		0.1 P+	< 0.1
Total PCBs Aroclors		1336-36-3	100	ND		0.2		0.6		ND		0.37	0.1
Metals	mg/kg			NT		NT		NT		NT		NT	
Arsenic		7440-38-2	500		2.80		8.10		8.21		< 2.56		< 12.2
Barium		7440-39-3	10000		26.3		72.7		56.4		25.6		65.3
Chromium		7440-47-3	2000		17.5		26.7		40.8		8.07		31.2
Lead		7439-92-1	6000		3.84		4.80		6.66		3.82		4.65
Zinc		7440-66-6	10000		29.6		34.2		43.6		28.8		34.6

- Notes:**
- All samples were concrete, except SSP-5, which was asphalt.
 - mg/kg = milligrams/kilogram or parts per million (ppm)
 - EPH = Extractable Petroleum Hydrocarbon
 - UCL = MCP Upper Concentration Limits
 - CAS No. = Chemical Abstracts Service Number
 - ND = Not Detected
 - NE = Not Established
 - Bolding indicates a detected result concentration

Validators Qualifiers:
C = Results confirmed by re-analysis
F+ = The result has a high bias due to matrix spike recovery above upper control limits.
F- = The result has a low bias due to matrix spike recovery below lower control limits.
P = The result is estimated due to the presence of another Aroclor pattern.

Table 15. Chemical Testing Results – Lot 1 Soil Disposal Characterization (2020)
 Former Tombarello Site
 Lawrence, Massachusetts

					Sample ID:	1802441-Lot1-DISP01	1802441-Lot1-DISP02-Grab	1802441-Lot1-DISP02-Comp
					Sample Location:	Lot1-DISP01	Lot1-DISP02B	Lot1-DISP02A, B, C (Composite)
					Sampling Date:	03/12/2020	03/12/2020	03/12/2020
					Sample Depth (ft):	1 - 7	1 - 3	1 - 3
					Lab Sample ID:	20C0466-01	20C0466-02	20C0466-03
Analyte	Method	Units	Reuse Levels for In-State Unlined Landfill	Reuse Levels for In-State Lined Landfill				
Volatile Organic Compounds (VOCs)	8260	mg/kg						NT
1,1,2,2-Tetrachloroethane			NS	NS	0.0059		< 0.0013	
Acetone			NS	NS	< 0.0068	G	0.123	
Methyl Ethyl Ketone (2-Butanone)			NS	NS	< 0.0068		0.0154	
Tetrachloroethene			NS	NS	0.0089		< 0.0032	
Total VOCs			4	10	0.0148		0.1384	
Semi-Volatile Organic Compounds (SVOCs)	8270	mg/kg					NT	
2-Methylnaphthalene			NS	NS	< 0.324			0.298
Acenaphthylene			NS	NS	< 0.752			1.4
Anthracene			NS	NS	< 1.50			2.3
Benzo(a)anthracene			NS	NS	2.28			5.58
Benzo(a)pyrene			NS	NS	2.52			5.77
Benzo(b)fluoranthene			NS	NS	2.42			4.97
Benzo(g,h,i)perylene			NS	NS	1.75			3.21
Benzo(k)fluoranthene			NS	NS	1.72			4
Chrysene			NS	NS	2.3			5.41
Dibenzo(a,h)anthracene			NS	NS	0.575			1.16
Fluoranthene			NS	NS	4.54			11.1
Fluorene			NS	NS	< 1.50			0.826
Indeno(1,2,3-cd)pyrene			NS	NS	1.5			3.07
Phenanthrene			NS	NS	2.43			8.3
Pyrene			NS	NS	4.39			10.8
Pyridine			NS	NS	<7.52			<3.44
Total SVOCs			100	100	26.425			68.194
Petroleum Hydrocarbons	8100M	mg/kg					NT	
Total petroleum hydrocarbons			2,500	5,000	352			876
Polychlorinated Biphenyls (PCBs)	8082	mg/kg					NT	
Aroclor 1242			NS	NS	< 0.06			0.1
Aroclor 1260			NS	NS	< 0.06			0.06
Total PCBs Aroclors			2	2	ND			0.16
Total Metals		mg/kg					NT	
Arsenic	6010		40	40	6.61			4.93
Barium	6010		NS	NS	171			57.3
Cadmium	6010		30	80	1.17			< 0.45
Chromium	6010		1000	1000	33.9			15.6
Lead	6010		1000	2000	392			185
Mercury	6010		10	10	0.559			0.059
Selenium	6010		NS	NS	< 4.41			< 4.48
Silver	6010		NS	NS	< 0.44			< 0.45
TCLP Metals	1311	mg/L					NT	
Lead			5	5	0.281			1.26
Other								
pH	9045	S.U.	NS	NS	7.75		NT	7.15
Flashpoint	1010	°F	NS	NS	> 200		NT	> 200
Reactive Cyanide	7.3.3.2	mg/kg	NS	NS	< 2.0		NT	< 2.0
Reactive Sulfide	7.3.4.1	mg/kg	NS	NS	< 2.0		NT	< 2.0
Solids, Percent	2540G	%	NS	NS	88		93	93

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. Unlined and lined landfill disposal criteria are from MassDEP Policy #COMM-97-001, dated August 15, 1997.
4. NT = The sample was not tested for this analyte.
5. ND = The analyte was not detected above the laboratory reporting limit. See the laboratory data sheets for the laboratory reporting limit.
6. NS = No disposal facility criteria has been established for this analyte.
7. mg/kg = milligrams per kilogram
8. mg/L = milligrams per liter
14. S.U. = standard units.
10. deg F = degrees Fahrenheit.
11. Soil samples for VOC analysis were preserved in the field with deionized water.
12. Bolding indicates a detected result concentration.

Validators Qualifiers:

- G The result is estimated due to duplicate precision outside control limits.

Table 16. Soil Chemical Testing Results - Lot 2 Soil Disposal Characterization (2020)

Former Tombarello Site
Lawrence, Massachusetts

	Sample ID:	1802441-Lot2-DISP01	1802441-Lot2-DISP02	1802441-Lot2-DISP03	1802441-Lot2-DISP04	1802441-Lot2-DISP05	1802441-Lot2-DISP06
	Sample Location:	DISP-01	DISP-02	DISP-03	DISP-04	DISP-05	DISP-05
	Sampling Date:	03/13/2020	03/13/2020	03/12/2020	03/12/2020	03/12/2020	03/12/2020
	Sample Depth (ft):	0 - 3	0 - 2	0 - 3	0 - 3	0 - 3	0 - 3
	Lab Sample ID:	20C0468-01	20C0468-02	20C0467-04	20C0467-03	20C0467-01	20C0467-02
Analyte	Method	Units					
Volatile Organic Compounds (VOCs)							
1,2,3-Trichlorobenzene	8260	mg/kg	< 0.322	0.0026	< 0.0037	< 0.0031	< 0.419
4-Methyl-2-pentanone			< 1.61	< 0.0048	0.0248	< 0.0063	< 2.09
Acetone			< 1.61	G	< 0.0048	0.0389	< 2.09
Chlorobenzene			< 0.322		< 0.0024	< 0.0037	3.34
Methyl Ethyl Ketone (2-Butanone)			< 1.61		< 0.0048	< 0.0074	< 0.0063
Naphthalene			33.5	< 0.0024	0.0701	< 0.0031	53.6
Tetrachloroethene			1.77	< 0.0024	< 0.0037	0.0048	< 0.419
Total VOCs			35.27	0.0026	0.1338	0.0048	56.94
Semi-Volatile Organic Compounds (SVOCs)							
1,2,4-Trichlorobenzene	8270	mg/kg	< 1.58	0.858	< 0.911	< 0.688	< 1.51
2,4-Dimethylphenol			1.34	< 0.346	< 0.205	< 0.155	< 0.339
2-Methylnaphthalene			26.6	< 0.332	1.37	< 0.149	0.961
Acenaphthene			85.5	< 0.374	5.98	< 0.688	9.68
Acenaphthylene			11.3	< 0.295	< 0.457	< 0.345	< 0.755
Anthracene			161	< 1.54	10.9	0.857	22.3
Benzo(a)anthracene			254	1.43	19.1	3.14	43.9
Benzo(a)pyrene			223	1.5	18.2	3.69	42
Benzo(b)fluoranthene			178	1.32	17.3	3.33	40.4
Benzo(g,h,i)perylene			108	< 1.54	8.86	2.65	23.7
Benzo(k)fluoranthene			155	< 1.54	11.4	2.67	24.2
Bis(2-ethylhexyl)phthalate			< 3.16	< 1.54	< 0.911	< 0.688	< 1.51
Chrysene			223	1.34	17.5	3.09	43.9
Dibenzo(a,h)anthracene			45.3	0.26	3.51	0.848	11.3
Dibenzofuran			59.8	< 1.54	3.52	< 0.688	9.79
Fluoranthene			561	2.99	43	5.37	117
Fluorene			85.5	< 1.54	5.82	< 0.688	16.2
Indeno(1,2,3-cd)pyrene			116	0.8	8.9	2.35	22.5
Naphthalene			50	< 1.54	3.71	< 0.688	4.05
Phenanthrene			507	2.84	38.3	3.4	106
Phenol			1.53	< 0.374	1.28	< 0.167	< 0.366
Pyrene			383	2.71	32.5	5.17	86
Pyridine			<15.8	<7.71	<4.57	<3.45	<7.55
Total SVOCs			3235.9	16.0	251.2	36.6	623.9
Polychlorinated Biphenyls (PCBs)							
Aroclor 1242		mg/kg	38.5	< 29.5	5.3	< 5.6	0.4
Aroclor 1254 [2C]			< 2.9	< 29.5	< 2.7	< 5.6	< 0.06
Aroclor 1260			3.6	192	31.0	48.7	9.0
Total PCBs Arickirs			42.1	192	36.3	48.7	9.4
Total Metals							
Arsenic	6010	mg/kg	88.2	9.79	11.1	10.1	7.15
Barium	6010		188	153	457	153	88.6
Cadmium	6010		0.92	2.14	63.7	1.17	1.24
Chromium	6010		32.1	29.7	49.2	30	34.4
Lead	6010		617	233	1330	446	260
Mercury	7471		0.887	0.561	0.746	0.419	0.376
Selenium	6010		< 4.70	< 4.09	< 5.31	< 4.52	< 4.27
Silver	6010		< 47.0	0.71	3.12	< 4.52	< 0.43
TCLP Metals							
Cadmium	1311	mg/L	NT	NT	0.353	NT	NT
Lead			0.284	0.476	0.746	0.626	2.78
Other							
pH	9045	S.U.	7.50	7.73	7.61	7.91	7.05
Flashpoint	1010	°F	> 200	> 200	> 200	> 200	> 200
Reactive Cyanide	7.3.3.2	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Reactive Sulfide	7.3.4.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Solids, Percent	2540G	%	85	86	74	93	91

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. NT = The sample was not tested for this analyte.
4. mg/kg = milligrams per kilogram
5. mg/L = milligrams per liter.
6. S.U. = standard units.
7. deg F = degrees Fahrenheit.
8. Soil samples for low level VOC analysis were preserved in the field with deionized water. Soil samples for high level VOC analysis were preserved in the field with methanol.
9. VOC results for Lot2-DISP01 and Lot2-DISP05 are from the methanol-preserved samples, and all other VOC results are from the deionized water samples.
10. Bolding indicates a detected result concentration.

Validators Qualifiers:

- G The result is estimated due to duplicate precision outside control limits
- B The reported result is attributed to sampling or laboratory contamination

**Table 17. Soil Samples Excluded from the Risk Characterization
Former Tombarello Site
Lawrence, Massachusetts**

Sample Name	Sample Date	Reason for Excluding
1802441-EW-06 2-3	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06E 0-0.5	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06E 1-2	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06E 2-3	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06N 0-0.5	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06N 1-2	7/31/2019	Within limits of 2018 excavation area
1802441-EW-06N 2-3	7/31/2019	Within limits of 2018 excavation area
1802441-EW-07 2-3	7/31/2019	Within limits of 2018 excavation area
FG-34-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
FG-34-0103	6/7/2016	Excavated by EPA - 2018 Removal Action
FG-34S-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
FG-34S-0103	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3-0102	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3-0203	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3N-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3N-0203	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3S-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3S-0203	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3W-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
G-3W-0203	6/7/2016	Excavated by EPA - 2018 Removal Action
L-07	10/14/2010	Excavated by EPA - 2018 Removal Action
M-06	10/14/2010	Excavated by EPA - 2018 Removal Action
M-07	10/14/2010	Excavated by EPA - 2018 Removal Action
M-7-0102	6/7/2016	Excavated by EPA - 2018 Removal Action
M-7-0203	6/7/2016	Excavated by EPA - 2018 Removal Action
M-7S-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
M-7S-0103	6/7/2016	Excavated by EPA - 2018 Removal Action
M-7W-0001	6/7/2016	Excavated by EPA - 2018 Removal Action
M-7W-0103	6/7/2016	Excavated by EPA - 2018 Removal Action
SVA-01-001	6/7/2016	Re-sampled by GEI SVA-01-GEI in 2000
SVA-01-0103	6/7/2016	Re-sampled by GEI SVA-01-GEI in 2000
WSB-26 (0-1')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-26 (0-1') DUP	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-26 (1-2')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-26 (2-3')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-31 (0-1')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-31 (1-2')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-31 (2-3')	7/14/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB50-1	9/2/2003	Excavated by EPA - 2018 Removal Action
WSB50-2	9/2/2003	Excavated by EPA - 2018 Removal Action
WSB50-3	9/2/2003	Excavated by EPA - 2018 Removal Action
WSB-6 (0-1')	2/12/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-6 (1-3')	2/12/2003	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-6-0001	6/7/2016	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.
WSB-6-0103	6/7/2016	Assumed excavated by EPA 2018 Removal Action Based on Subsequent Sampling.

Table 19. PCB Hot Spot Summary
Former Tombarello Site
Lawrence, Massachusetts

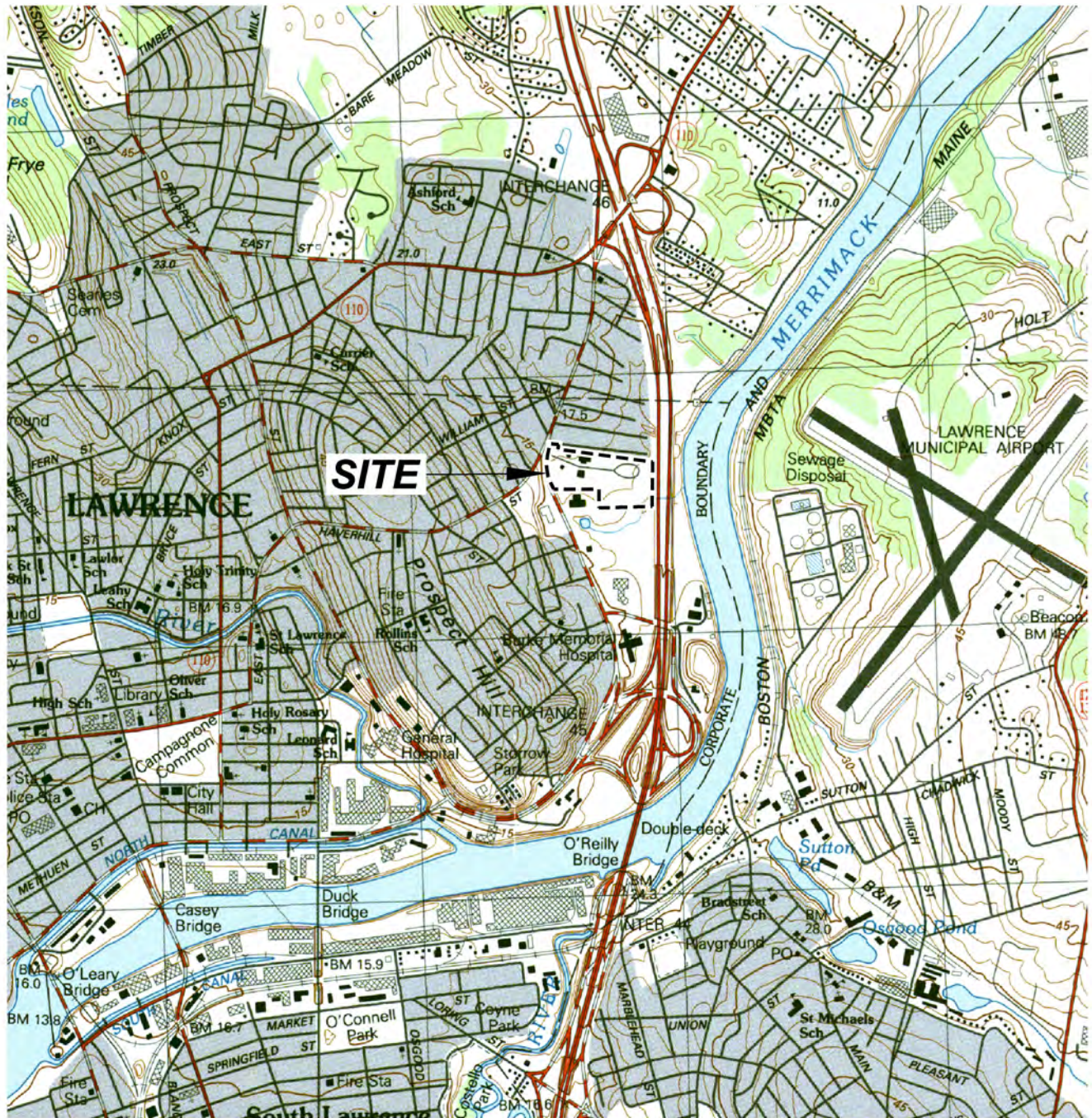
Location Name	Sample Name	Start Depth (feet)	End Depth (feet)	Sample Date	PCB Concentration (mg/kg)
W-07E	1802441-W-07E 0-0.5	0	0.5	9/12/2019	7020
W-07E	1802441-W-07E 1-2	1	2	9/12/2019	28
W-07E	1802441-W-07E 2-3	2	3	9/12/2019	11.1
W-07EE	1802441-W-07EE 0-0.5	0	0.5	3/12/2020	208.9
W-07EE	1802441-W-07EE 1-2	1	2	3/12/2020	23.5
W-07EE	1802441-W-07EE 2-3	2	3	3/12/2020	2.9
W-07-GEI	1802441-W-07 0-3	0	3	8/6/2019	4903
W-07-GEI	1802441-W-07- 5-7	5	7	8/6/2019	0.4
W-07S	1802441-W-07S 0-0.5	0	0.5	9/12/2019	9.8
W-07S	1802441-W-07S 1-2	1	2	9/12/2019	3650
W-07S	1802441-W-07S 2-3	2	3	9/12/2019	17.7
W-07SE	1802441-W-07SE 0-0.5	0	0.5	3/12/2020	25.9
W-07SE	1802441-W-07SE 1-2	1	2	3/12/2020	11200.6
W-07SE	1802441-W-07SE 2-3	2	3	3/12/2020	124006.7
W-07SE	1802441-W-07SE 3-5	3	5	3/13/2020	36140
Exposure Point Concentration:					12,483

General Notes

1. mg/kg = milligrams per kilogram
2. PCB = polychlorinated biphenyls

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Figures



This Image provided by MassGIS is from U.S.G.S. Topographic
 7.5 X 15 Minute Series
 Lawrence, MA Quadrangle, 1987.
 Datum is National Geodetic Vertical Datum of 1929 (NGVD29).
 Contour Interval is 3 Meters.



Revised Phase II Comprehensive Site
 Assessment and Revised Tier Site Classification
 Former Tombarello Site
 Lawrence, Massachusetts

City of Lawrence
 Lawrence, Massachusetts



Project 1802441

SITE LOCATION MAP

August 2020

Fig. 1



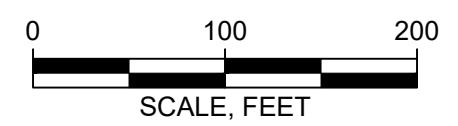
LOT 1
 AREA =
 114,017 SQ.FT ±
 2.617 ACRES ±

LOT 2
 AREA =
 494,982 SQ.FT ±
 11.363 ACRES ±

LEGEND:
 ———— PROPERTY BOUNDARY
 ———— DISPOSAL SITE BOUNDARY (RTN 3-18126)

NOTE:

1. PLANIMETRIC SURVEY WAS PREPARED FOR GEI CONSULTANTS, INC. BY NITSCH ENGINEERING, BOSTON, MA DATED APRIL 1, 2019.
2. THE PURPOSE OF PLANIMETRIC SURVEY WAS TO SHOW EXISTING CONDITIONS AS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY WHICH OCCURRED BETWEEN 02/25/2019 AND 03/28/2019.
3. THIS PLANIMETRIC SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE ABSTRACT.
4. THE EXISTING TOPOGRAPHIC INFORMATION WAS OBTAINED BY GEI CONSULTANTS USING AN UNMANNED AIRCRAFT SYSTEM (UAS) ON APRIL 15, 2019. THE VERTICAL DATUM IS NAVD88.



Phase II Comprehensive Site Assessment Update
 and Revised Tier Classification
 Former Tombarello Site Lawrence, Massachusetts
 City of Lawrence
 Lawrence, Massachusetts



DISPOSAL SITE PLAN
 August 2020
 Fig. 2

MassDEP - Bureau of Waste Site Cleanup

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

Site Information:

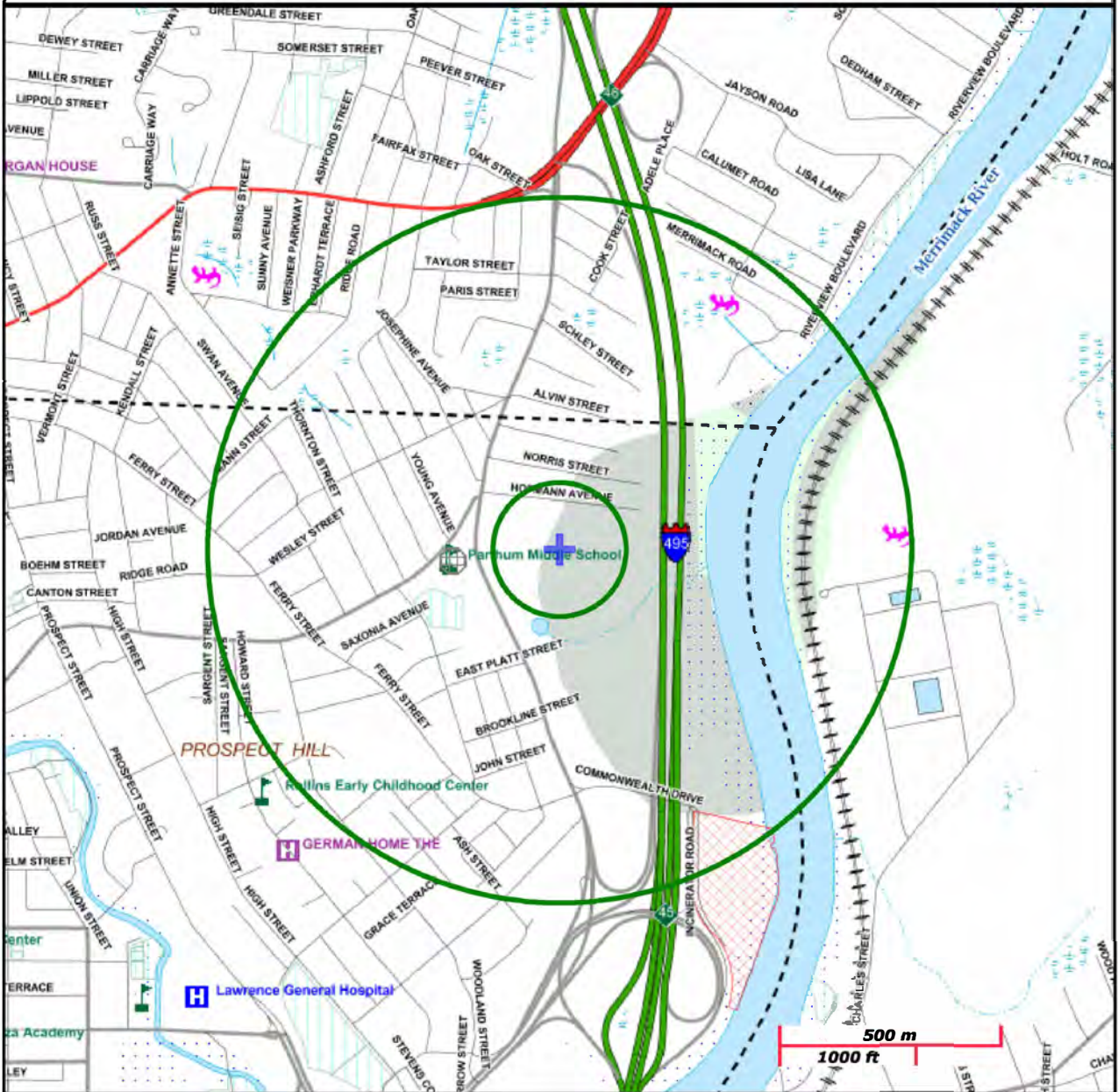
207 MARSTON LAWRENCE, MA

NAD83 UTM Meters:
4731832mN, 324756mE (Zone: 19)
August 1, 2018

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:
<http://www.mass.gov/mqis/>



MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A	
Boundaries: Town, County, DEP Region; Train, Powerline; Pipeline; Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat	
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam	Wetlands: Freshwater, Saltwater, Cranberry Bog	
Aquifers: Medium Yield, High Yield, EPA Sole Source	FEMA 100yr Floodplain; Protected Open Space; ACEC	
Non Potential Drinking Water Source Area: Medium, High (Yield)	Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential	
	Solid Waste Landfill; PWS: Com. GW, SW, Emerg., Non-Com.	

Revised Phase II Comprehensive Site Assessment
and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts

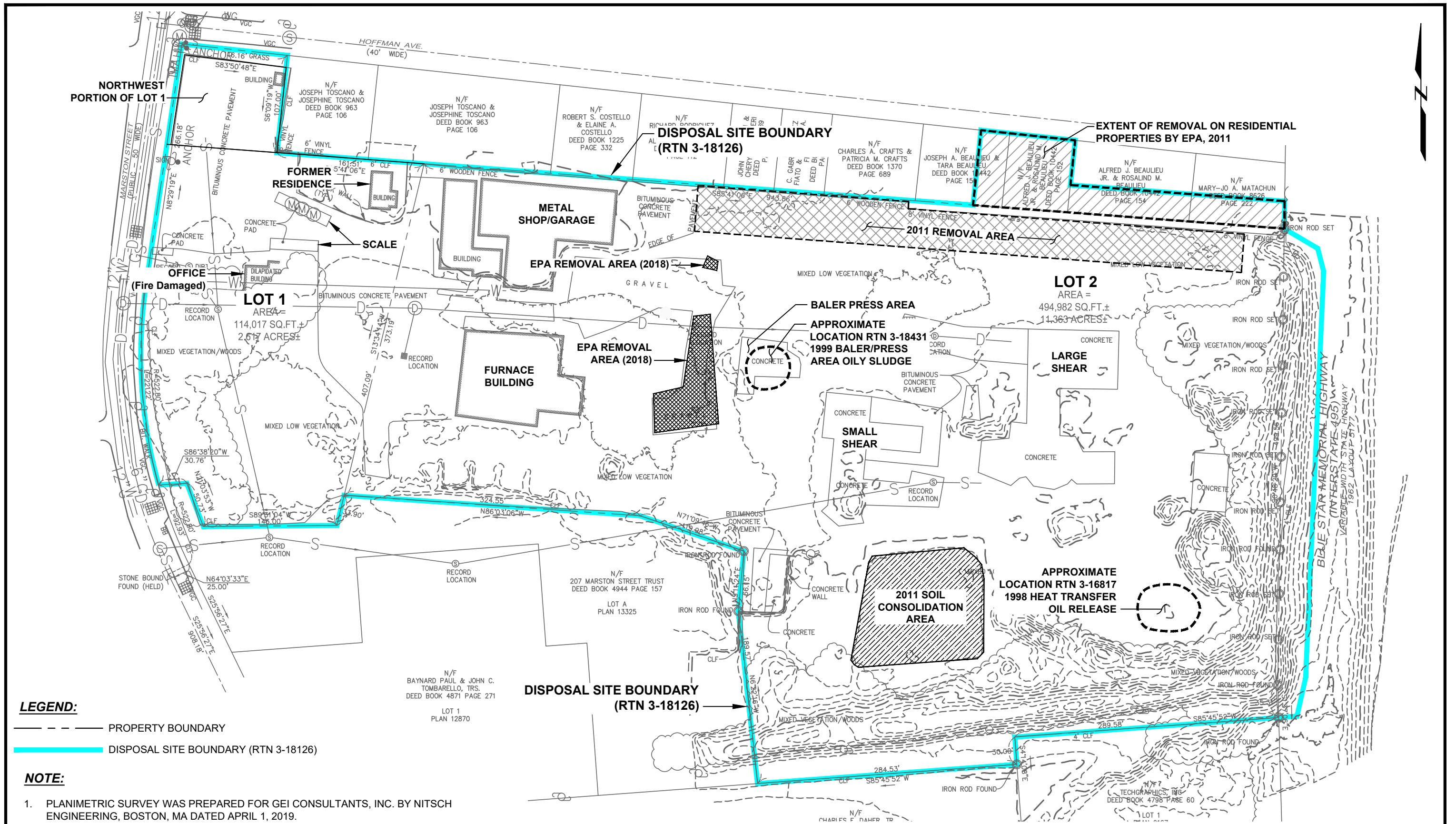


Project 1802441

MASSGIS SITE
ASSESSMENT MAP

August 2020

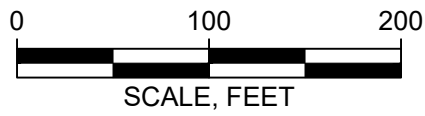
Fig. 3



LEGEND:
 - - - - - PROPERTY BOUNDARY
 ——— DISPOSAL SITE BOUNDARY (RTN 3-18126)

NOTE:

1. PLANIMETRIC SURVEY WAS PREPARED FOR GEI CONSULTANTS, INC. BY NITSCH ENGINEERING, BOSTON, MA DATED APRIL 1, 2019.
2. THE PURPOSE OF PLANIMETRIC SURVEY WAS TO SHOW EXISTING CONDITIONS AS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY WHICH OCCURRED BETWEEN 02/25/2019 AND 03/28/2019.
3. THIS PLANIMETRIC SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE ABSTRACT.
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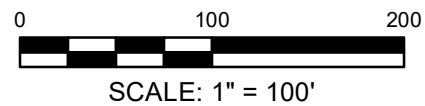
Phase II Comprehensive Site Assessment Update
 and Revised Tier Classification
 Former Tombarello Site Lawrence, Massachusetts
 City of Lawrence
 Lawrence, Massachusetts



SITE FEATURES
 Project 1802441 August 2020 Fig. 4



SOURCE:
1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts

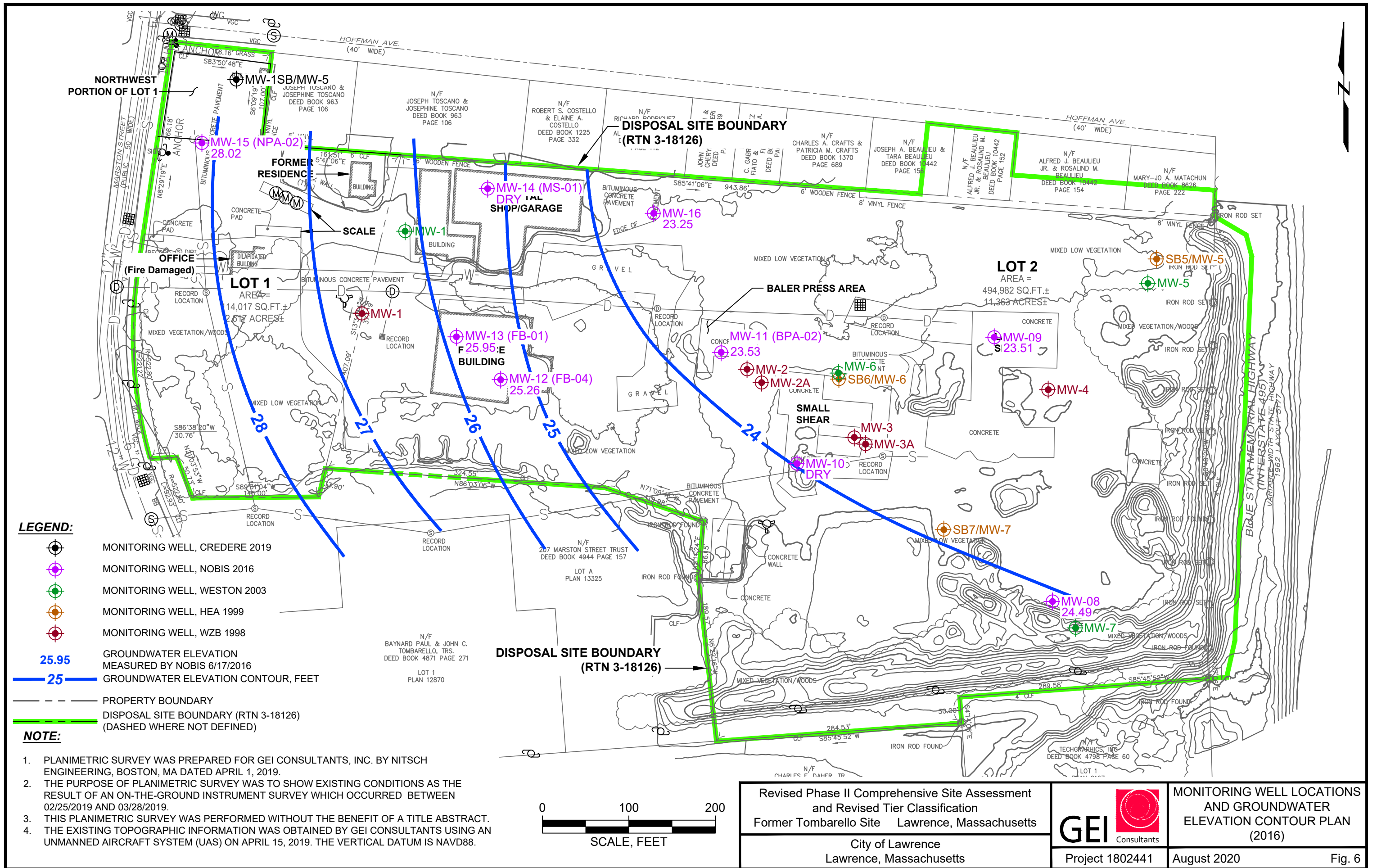


Project 1802441

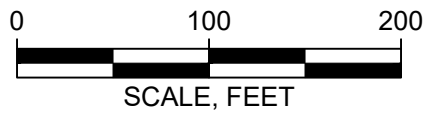
INVESTIGATION LOCATIONS
SURFACE SOIL AND SOIL
BORINGS

August 2020

Fig. 5



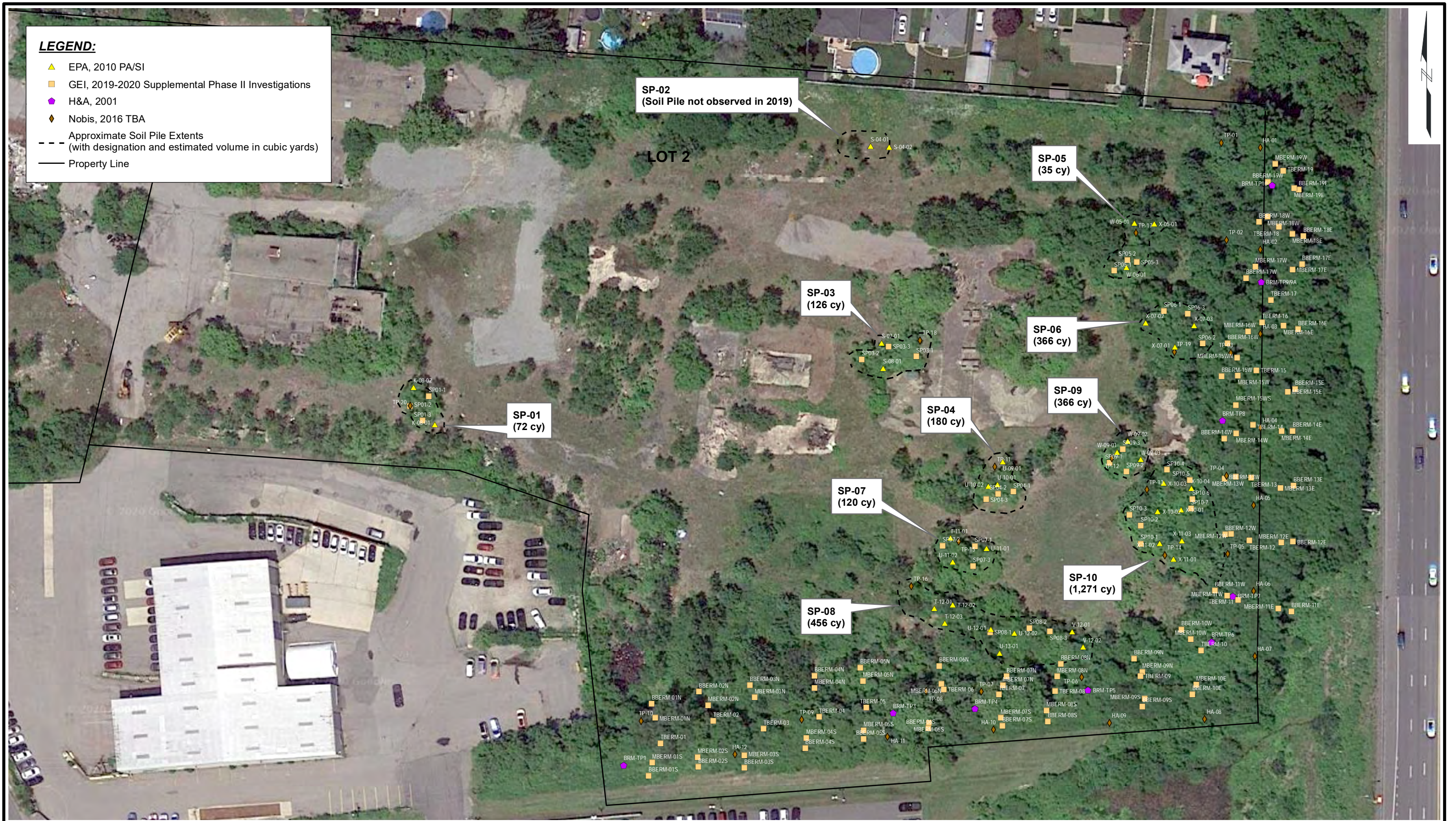
- LEGEND:**
- MONITORING WELL, CREDERE 2019
 - MONITORING WELL, NOBIS 2016
 - MONITORING WELL, WESTON 2003
 - MONITORING WELL, HEA 1999
 - MONITORING WELL, WZB 1998
 - 25.95 GROUNDWATER ELEVATION MEASURED BY NOBIS 6/17/2016
 - 25 GROUNDWATER ELEVATION CONTOUR, FEET
 - PROPERTY BOUNDARY
 - DISPOSAL SITE BOUNDARY (RTN 3-18126) (DASHED WHERE NOT DEFINED)
- NOTE:**
1. PLANIMETRIC SURVEY WAS PREPARED FOR GEI CONSULTANTS, INC. BY NITSCH ENGINEERING, BOSTON, MA DATED APRIL 1, 2019.
 2. THE PURPOSE OF PLANIMETRIC SURVEY WAS TO SHOW EXISTING CONDITIONS AS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY WHICH OCCURRED BETWEEN 02/25/2019 AND 03/28/2019.
 3. THIS PLANIMETRIC SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE ABSTRACT.
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Revised Phase II Comprehensive Site Assessment and Revised Tier Classification Former Tombarello Site Lawrence, Massachusetts City of Lawrence Lawrence, Massachusetts		MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATION CONTOUR PLAN (2016)
Project 1802441	August 2020	Fig. 6

LEGEND:

- ▲ EPA, 2010 PA/SI
- GEI, 2019-2020 Supplemental Phase II Investigations
- ◆ H&A, 2001
- ◆ Nobis, 2016 TBA
- - - Approximate Soil Pile Extents (with designation and estimated volume in cubic yards)
- Property Line

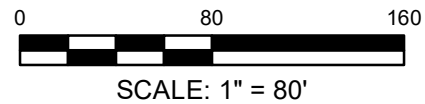


NOTES:

1. Soil pile extents and volumes based on topographic information obtained by GEI using an Unmanned Aircraft System (UAS) on April 15, 2019.

SOURCE:

1. Aerial Image Obtained from Google Earth Pro.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts



Project 1802441

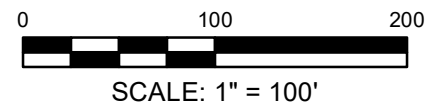
INVESTIGATION LOCATIONS
SOIL BERM AND SOIL PILES

August 2020

Fig. 7



SOURCE:
1. Aerial Image Obtained from Google Earth Pro.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts



Project 1802441

INVESTIGATION LOCATIONS
CONCRETE AND ASPHALT

August 2020

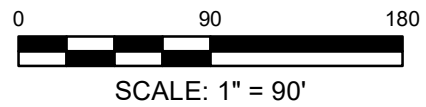
Fig. 8



LEGEND:

- GEI 2020 Sample Location
- Property Line
- EPA Excavation Area

SOURCE:
1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site

City of Lawrence
Lawrence, Massachusetts



SOIL DISPOSAL CHARACTERIZATION SAMPLE LOCATIONS

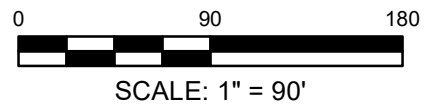
Project 1802441

August 2020

Fig. 9



SOURCE:
1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO.



Notes:
1. mg/kg = milligram per kilogram
2. Only polychlorinated biphenyl (PCB) concentrations representative of current conditions are shown.

Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site

City of Lawrence
Lawrence, Massachusetts

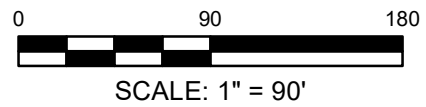


PCBs IN SOIL (0 to 1 ft)

Project 1802441 August 2020 Fig. 10



SOURCE:
 1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO.



Notes:
 1. mg/kg = milligram per kilogram
 2. Only polychlorinated biphenyl (PCB) concentrations representative of current conditions are shown.

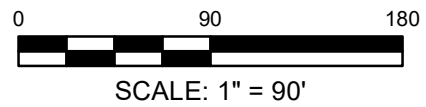
Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
 Former Tombarello Site
 City of Lawrence
 Lawrence, Massachusetts



PCBs IN SOIL (1 to 2 ft)
 Project 1802441 August 2020 Fig. 11



SOURCE:
 1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO.



Notes:
 1. mg/kg = milligram per kilogram
 2. Only polychlorinated biphenyl (PCB) concentrations representative of current conditions are shown.

Revised Phase II Comprehensive Site Assessment and
 Revised Tier Classification
 Former Tombarello Site

City of Lawrence
 Lawrence, Massachusetts

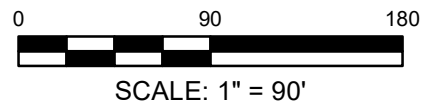


PCBs IN SOIL (2 to 3 ft)

Project 1802441 August 2020 Fig. 12



SOURCE:
 1. AERIAL IMAGE OBTAINED FROM
 GOOGLE EARTH PRO.



Notes:
 1. mg/kg = milligram per kilogram
 2. Only polychlorinated biphenyl (PCB) concentrations representative of current conditions are shown.

Revised Phase II Comprehensive Site Assessment and
 Revised Tier Classification
 Former Tombarello Site

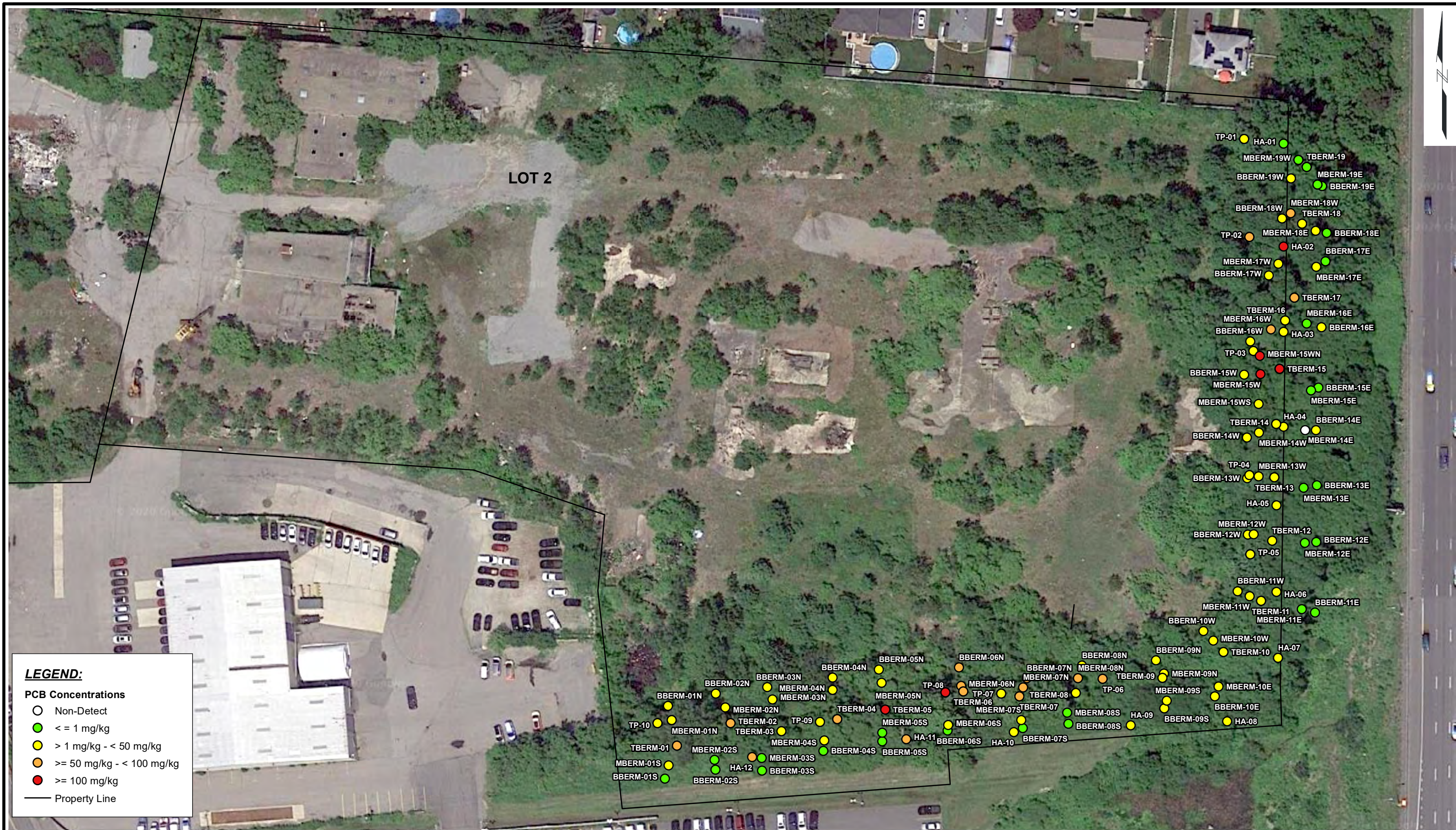
City of Lawrence
 Lawrence, Massachusetts

Project 1802441

PCBs IN SOIL (> 3 ft)

August 2020

Fig. 13

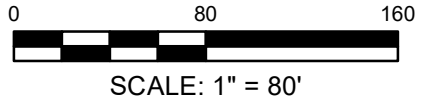


LEGEND:

PCB Concentrations

- Non-Detect
- ≤ 1 mg/kg
- > 1 mg/kg - < 50 mg/kg
- ≥ 50 mg/kg - < 100 mg/kg
- ≥ 100 mg/kg
- Property Line

SOURCE:
1. Aerial Image Obtained from Google Earth Pro.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts

Project 1802441

PCB CONCENTRATIONS
SOIL BERMS

August 2020

Fig. 14



LEGEND:

PCB Concentrations

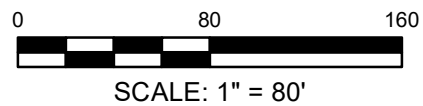
- Non-Detect
- <= 1 mg/kg
- > 1 mg/kg - < 50 mg/kg
- >= 50 mg/kg - < 100 mg/kg
- >= 100 mg/kg

--- Approximate Soil Pile Extents
(with designation and estimated volume in cubic yards)

— Property Line

SOURCE:

1. Aerial Image Obtained from Google Earth Pro.



Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Site
Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts



Project 1802441

PCB CONCENTRATIONS
SOIL PILES

August 2020

Fig. 15



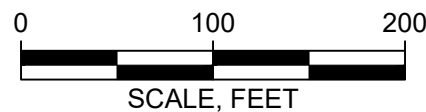
LEGEND:

- L SAMPLE EXCEEDING UPPER CONCENTRATION LIMIT (UCL) FOR LEAD
- C SAMPLE EXCEEDING UCL FOR CHROMIUM

— PROPERTY BOUNDARY

NOTE:

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Phase II Comprehensive Site Assessment Update
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Former Tombarello Site Lawrence, Massachusetts

City of Lawrence
Lawrence, Massachusetts



Project 1802441

METALS
UPPER CONCENTRATION
LIMIT EXCEEDENCES

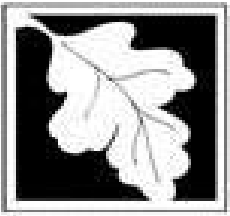
August 2020

Fig. 16

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix A

MassDEP Transmittal Forms



TIER CLASSIFICATION TRANSMITTAL FORM
Pursuant to 310 CMR 40.0500 (Subpart E)

Release Tracking Number

3 - 18126

A. DISPOSAL SITE LOCATION:

1. Disposal Site Name: TOMBARELLO AND SONS INC HOFMAN AVE
2. Street Address: 207 MARSTON ST
3. City/Town: LAWRENCE 4. ZIP Code: 018410000
5. Coordinates: Latitude: N 42.71928 Longitude: W 71.14012

B. THIS FORM IS BEING USED TO: (check all that apply)

- 1. Submit a new **Tier Classification Submittal**, including a **Tier Classification Compliance History** (BWSC107B).
Check the tier classification category:
 - a. Tier I b. Tier II
 - c. Check all Tier I criteria that apply, pursuant to 310 CMR 40.0520(2):
 - i. Groundwater is located within an Interim Wellhead Protection Area, Zone II, or within 500 feet of a Private Water Supply Well, and there is evidence of groundwater contamination by an Oil or Hazardous Material at the time of Tier Classification at concentrations equal to or exceeding the applicable RCGW-1 Reportable Concentration set forth in 310 CMR 40.0360.
 - ii. An Imminent Hazard is present at the time of Tier Classification.
 - iii. One or more remedial actions are required as part of an Immediate Response Action pursuant to 310 CMR 40.0414(2).
 - iv. One or more response actions are required as part of an Immediate Response Action to eliminate or mitigate a Critical Exposure Pathway pursuant to 310 CMR 40.0414(3).
 - d. Check here if including an **Eligible Person, Eligible Tenant, or Other Person Certification** (BWSC107D)
- 2. Submit a **Phase I Completion Statement** as per 310 CMR 40.0480.
If previously submitted, provide date _____
mm/dd/yyyy
- 3. Submit a **Phase II Scope of Work** as per 310 CMR 40.0834.
If previously submitted, provide date _____
mm/dd/yyyy
- 4. Submit a **Phase II Conceptual Scope of Work supporting a Tier Classification Submittal**.
- 5. Submit a **Tier Classification Extension Submittal** for Response Actions at a Tier Classified Site including the **Tier Classification Compliance History** (BWSC107B).
- 6. Submit a **Tier Classification Transfer Submittal** for a change in person(s) undertaking Response Actions at a Tier Classified Site including the **Tier Classification Compliance History** (BWSC107B) and the **Tier Classification Transferor Certification** (BWSC107C).
Proposed effective date of transfer : _____
mm/dd/yyyy



TIER CLASSIFICATION TRANSMITTAL FORM
Pursuant to 310 CMR 40.0500 (Subpart E)

Release Tracking Number

3 - 18126

B. THIS FORM IS BEING USED TO: (cont.)

7. Submit a **Revised Tier Classification Submittal**.

Check the revised Tier Classification Category. If the Tier Classification Category is not changing, indicate the current classification.

- a. Tier I b. Tier II

c. Check all Tier I criteria that apply, pursuant to 310 CMR 40.0520(2):

- i. Groundwater is located within an Interim Wellhead Protection Area, Zone II, or within 500 feet of a Private Water Supply Well, and there is evidence of groundwater contamination by an Oil or Hazardous Material at the time of Tier Classification at concentrations equal to or exceeding the applicable RCGW-1 Reportable Concentration set forth in 310 CMR 40.0360.
- ii. An Imminent Hazard is present at the time of Tier Classification.
- iii. One or more remedial actions are required as part of an Immediate Response Action pursuant to 310 CMR 40.0414(2).
- iv. One or more response actions are required as part of an Immediate Response Action to eliminate or mitigate a Critical Exposure Pathway pursuant to 310 CMR 40.0414(3).

d. Check here if including an **Eligible Person, Eligible Tenant, or Other Person Certification** (BWSC107D)

8. Provide a **Notice that an additional Release Tracking Number(s) is (are) being linked to this Tier Classified Site** (Primary RTN). Future response actions addressing the Release or Threat of Release notification condition associated with additional Release Tracking Numbers (RTNs) will be conducted as part of the Response Actions planned or ongoing at the Primary Site listed above. For a previously Tier Classified Primary Site, if there is a reasonable likelihood that the addition of the new secondary RTN(s) would change the classification of the site, a **Revised Tier Classification Submittal** must also be made.

Provide Release Tracking Number(s): a. - b. -

All future Response Actions must occur according to the deadlines applicable to the Primary RTN. Use only the Primary RTN when making future submittals for this site unless specifically relating to response actions started before the linking occurred.



TIER CLASSIFICATION TRANSMITTAL FORM

Pursuant to 310 CMR 40.0500 (Subpart E)

Release Tracking Number

3 - 18126

C. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that a **Tier Classification Submittal** is being submitted, this Tier Classification Submittal has been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Phase I Completion Statement** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Phase II Scope of Work** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Tier Classification Extension Submittal** or a **Tier Classification Transfer Submittal** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP#: 9719

2. First Name: ILEENS

3. Last Name: GLADSTONE

4. Telephone: 781-721-4012

5. Ext.:

6. Email: IGLADSTONE@GEICONSULTANTS.COM

7. Signature:

8. Date: mm/dd/yyyy

9. LSP Stamp:





TIER CLASSIFICATION TRANSMITTAL FORM

Pursuant to 310 CMR 40.0500 (Subpart E)

Release Tracking Number

3 - 18126

D. PERSON MAKING SUBMITTAL:

1. Check all that apply: a. change in contact name b. change of address c. change in the person undertaking response actions
2. Name of Organization: CITY OF LAWRENCE
3. Contact First Name: PEDRO 4. Last Name: SOTO
5. Street: 12 METHUEN STREET 6. Title: PLANNING DIRECTOR
7. City/Town: LAWRENCE 8. State: MA 9. ZIP Code: 018400000
10. Telephone: 978-620-3501 11. Ext.: _____ 12. Email: psoto@cityoflawrence.com

E. RELATIONSHIP OF PERSON MAKING SUBMITTAL TO DISPOSAL SITE: Check here to change relationship

1. RP or PRP a. Owner b. Operator c. Generator d. Transporter
- e. Other RP or PRP Specify: _____
2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
4. Any Other Person Making Submittal Specify Relationship: _____

F. REQUIRED ATTACHMENT AND SUBMITTALS:

1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of any Phase Reports to DEP.
3. Check here to certify that a copy of the Legal Notice of a Tier Classification or Re-classification Submittal is attached, and a cover letter and a copy of the notice is sent to the Chief Municipal Officer and the Local Board of Health pursuant to 310 CMR 40.0510(3) and 40.1403.
4. Check here to certify that the owner of a Public Water Supply has been provided written notice pursuant to 310 CMR 40.0510(3).
5. For a Tier Classification Extension Submittal, check here to certify that a statement summarizing why a Permanent or Temporary Solution has not been achieved at the Disposal Site is attached.
6. For a Tier Classification Transfer Submittal, check here to certify that a statement summarizing the reasons for the proposed change in person(s) undertaking the Response Actions is attached. All Response Actions must be completed by the deadline applicable to the person who first filed a Tier Classification Submittal for the Disposal Site.
7. Check here if any non-updatable information provided on this form is incorrect, e.g., Release Address/Location Aid. Send corrections to bwsc.edep@state.ma.us.
8. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



TIER CLASSIFICATION TRANSMITTAL FORM
Pursuant to 310 CMR 40.0500 (Subpart E)

Release Tracking Number

3 - 18126

G. CERTIFICATION OF PERSON MAKING SUBMITTAL:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

If submitting a Tier II Classification, Extension or Transfer, I also attest under the pains and penalties of perjury that (i) I/the person(s) or entity(ies) on whose behalf this submittal is made has/have personally examined and am/is familiar with the requirements of M.G.L. c. 21E and 310 CMR 40.0000; (ii) based upon my inquiry of the/those Licensed Site Professional(s) employed or engaged to render Professional Services for the disposal site which is the subject of this Transmittal Form and of the person(s) or entity(ies) on whose behalf this submittal is made, and my/that person's(s') or entity's(ies') understanding as to the estimated costs of necessary response actions, that/those person(s) or entity(ies) has/have the technical, financial and legal ability to proceed with response actions for such site in accordance with M.G.L. c. 21E, 310 CMR 40.0000 and other applicable requirements; and (iii) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is aware of the requirements in 310 CMR 40.0172 for notifying the Department in the event that I/the person(s) or entity(ies) on whose behalf this submittal is made learn(s) that it/they is/are unable to proceed with the necessary response actions.

2. By: _____ 3. Title: PLANNING DIRECTOR
Signature

4. For: CITY OF LAWRENCE 5. Date: _____
(Name of person or entity recorded in Section D) mm/dd/yyyy

6. Check here if the address of the person providing certification is different from address recorded in Section D.

7. Street: _____

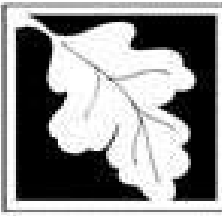
8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY):





**ELIGIBLE PERSON, ELIGIBLE TENANT OR OTHER
PERSON CERTIFICATION TRANSMITTAL FORM**

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0570; requirements for Eligible Persons, Eligible
Tenants or Other Persons seeking to re-establish response action deadlines

A. ELIGIBLE PERSON , ELIGIBLE TENANT OR OTHER PERSON MAKING CERTIFICATION:

1. Name of Organization (if applicable): CITY OF LAWRENCE
2. Contact First Name: PEDRO 3. Last Name: SOTO
4. Street: 12 METHUEN STREET 5. Title: PLANNING DIRECTOR
6. City/Town: LAWRENCE 7. State: MA 8. ZIP Code: 018400000
9. Telephone: 9786203501 10. Ext.: _____ 11. Email: psoto@cityoflawrence.com

B. STATUS OF PERSON MAKING CERTIFICATION:

The person or entity listed below must be an Eligible Person or Eligible Tenant pursuant to M.G.L. c. 21E, §2 and 310
CMR 40.0006, or an Other Person pursuant to 310 CMR 40.0006: (check one)

1. **Eligible Person** who became an owner or operator of the disposal site or portion thereof:

- a. prior to December 14, 2007. b. on or after December 14, 2007.

c. Date on which the person or entity listed in Section A became an Eligible Person: _____
mm/dd/yyyy

2. **Eligible Tenant** who acquired occupancy, possession or control of the disposal site or portion thereof:

- a. prior to December 14, 2007. b. on or after December 14, 2007.

Date on which the person or entity listed in Section A became an Eligible Tenant: _____
mm/dd/yyyy

3. Person who became an **Other Person**:

- a. prior to December 14, 2007. b. on or after December 14, 2007.

c. Date on which the person or entity listed in Section A became an Other Person: 5/9/2016
mm/dd/yyyy

d. The following facts support the statement that the person or entity listed in Section A is an Other Person and not a
Responsible Party or Potentially Responsible Party:

Check here if attaching additional documentation supporting the facts listed above.



**ELIGIBLE PERSON, ELIGIBLE TENANT OR OTHER
PERSON CERTIFICATION TRANSMITTAL FORM**

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0570; requirements for Eligible Persons, Eligible
Tenants or Other Persons seeking to re-establish response action deadlines.

C. CERTIFICATION OF ELIGIBLE PERSON, ELIGIBLE TENANT OR OTHER PERSON:

1. I, _____, attest under the pains and penalties of perjury: (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this submittal, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, (iii) that I am fully authorized to make this attestation on behalf of the person or entity identified in Section A above, and

> **if Section B of this form indicates Eligible Person**, the person or entity listed in Section A: (i) is an owner or operator of the disposal site or portion thereof who would be liable under M.G.L. c. 21E, § 5(a)(1) solely; (ii) did not cause or contribute to the release; (iii) did not own or operate the site at the time of release; and (iv) is not, and was not at any time, affiliated with any other person or entity (a) who owned or operated the property from which the release originated, or caused such release and (b) who is potentially liable under M.G.L. c. 21E for the disposal site though any direct or indirect contractual, corporate or financial relationship other than (1) that established by any instrument creating such person's or entity's interest in property within the disposal site boundaries or (2) that established by an instrument wholly unrelated to the disposal site and which would not otherwise render such person or entity potentially liable as a result of the relationship.

> **if Section B of this form indicates Eligible Tenant**, the person or entity listed in Section A: (i) acquired occupancy, possession or control of the disposal site, or a portion thereof, after the release of oil or hazardous material had been reported to the department; (ii) did not cause or contribute to the release; (iii) is not otherwise liable pursuant to M.G.L. c. 21E, § 5(a)(2) through (5); and (iv) is not, and was not at any time, affiliated with any other person or entity (a) who owned or operated the property from which the release originated, or caused such release and (b) who is potentially liable under M.G.L. c. 21E for the disposal site though any direct or indirect contractual, corporate or financial relationship other than (1) that established by any instrument creating such person's or entity's interest in property within the disposal site boundaries or (2) that established by an instrument wholly unrelated to the disposal site and which would not otherwise render such person or entity potentially liable as a result of the relationship.

> **if Section B of this form indicates Other Person**, the person or entity listed in Section A: (i) is not a Responsible Party or Potentially Responsible Party, based upon the facts set forth in B3d above; and (ii) is not, and was not at any time, affiliated with any other person or entity (a) who owned or operated the property from which the release originated, or caused such release and (b) who is potentially liable under M.G.L. c. 21E for the disposal site though any direct or indirect contractual, corporate or financial relationship other than (1) that established by any instrument creating such person's or entity's interest in property within the disposal site boundaries or (2) that established by an instrument wholly unrelated to the disposal site and which would not otherwise render such person or entity potentially liable as a result of the relationship.

If the Eligible Person, Eligible Tenant or Other Person identified in Section A is a **Trust**, I hereby certify that said trust consists of trustees, members and/or beneficiaries, all of whom satisfy the requirements of the applicable certification set forth above.

I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate or incomplete information.

2. By: _____
Signature

3. Title: PLANNING DIRECTOR

4. For: CITY OF LAWRENCE

5. Date: _____
mm/dd/yyyy

ATTACHMENT TO BWSC107
QUESTION F.1.
RTN 3-18126

Investigations conducted on Lot 2 by GEI between July and September 2019 and in March 2020 were conducted on behalf of the City of Lawrence under an EPA Brownfields Assessment Grant for Lot 2. The investigations were conducted in accordance with Site-specific Quality Assurance Project Plan (QAPP) Addendums dated July 2019 and February 2020 prepared by GEI and approved by EPA.

Investigations on Lot 1 conducted by GEI in March 2020 were conducted on behalf of the City of Lawrence under an EPA Brownfields Cleanup Grant. The investigations were conducted in accordance with Site-specific Quality Assurance Project Plan (QAPP) Addendum dated March 11, 2020 prepared by GEI and approved by EPA.

Investigations on Lot 1 by Credere from September 2019 through January 2020 were conducted on behalf of the City of Lawrence under a grant from the Merrimack Valley Planning Commission (MVPC). The sampling and analysis were conducted in accordance with a Site-Specific Quality Assurance Project Plan (QAPP) Addendum to Credere's Generic Brownfields QAPP, dated August 26, 2019 and a November 27, 2019 Amendment.

ATTACHMENT TO BWSC107D
QUESTION B.3.d.
RTN 3-18126

The City of Lawrence is a Municipality with Exempt Status under M.G.L. Chapter 21E. The City acquired the Property on May 9, 2016 through tax foreclosure; did not contribute to releases at the Site; and is working to divest itself of ownership of the Property. The City meets the requirements of M.G.L. Chapter 21E, Section 2(d) and is therefore not a Potentially Responsible Party (PRP) for the Site.



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

A. SITE LOCATION:

1. Site Name: TOMBARELLO AND SONS INC HOFMAN AVE
2. Street Address: 207 MARSTON ST
3. City/Town: LAWRENCE 4. ZIP Code: 018410000

5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category:
 a. Tier I b. Tier ID c. Tier II

B. THIS FORM IS BEING USED TO: (check all that apply)

1. Submit a **Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
 2. Submit a **Revised Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
 3. Submit a **Phase II Scope of Work**, pursuant to 310 CMR 40.0834.
 4. Submit an **interim Phase II Report**. This report does not satisfy the response action deadline requirements in 310 CMR 40.0500.
 5. Submit a **final Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
 6. Submit a **Revised Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
 7. Submit a **Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
 8. Submit a **Revised Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
 9. Submit a **Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
 10. Submit a **Modified Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
 11. Submit an **As-Built Construction Report**, pursuant to 310 CMR 40.0875.
 12. Submit a **Phase IV Status Report**, pursuant to 310 CMR 40.0877.
 13. Submit a **Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.

Specify the outcome of Phase IV activities: (check one)

- a. Phase V Operation, Maintenance or Monitoring of the Comprehensive Remedial Action is necessary to achieve a Permanent or Temporary Solution.
 b. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
 c. The requirements of a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.



COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

B. THIS FORM IS BEING USED TO (cont.): (check all that apply)

14. Submit a **Revised Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.
15. Submit a **Phase V Status Report**, pursuant to 310 CMR 40.0892.
16. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)
- a. Type of Report: (check one) i. Initial Report ii. Interim Report iii. Final Report
- b. Frequency of Submittal: (check all that apply)
- i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.
- ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.
- iii. A Remedial Monitoring Report(s) submitted every six months, concurrent with a Status Report.
- iv. A Remedial Monitoring Report(s) submitted annually, concurrent with a Status Report.
- c. Status of Site: (check one) i. Phase IV ii. Phase V iii. Remedy Operation Status iv. Temporary Solution
- d. Number of Remedial Systems and/or Monitoring Programs: _____
- A separate BWSC108A, CRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.
17. Submit a **Remedy Operation Status**, pursuant to 310 CMR 40.0893.
18. Submit a **Status Report to maintain a Remedy Operation Status**, pursuant to 310 CMR 40.0893(2).
19. Submit a **Transfer and/or a Modification of Persons Maintaining a Remedy Operation Status (ROS)**, pursuant to 310 CMR 40.0893(5) (check one, or both, if applicable).
- a. Submit a Transfer of Persons Maintaining an ROS (the transferee should be the person listed in Section D, "Person Undertaking Response Actions").
- b. Submit a Modification of Persons Maintaining an ROS (the primary representative should be the person listed in Section D, "Person Undertaking Response Actions").
- c. Number of Persons Maintaining an ROS not including the primary representative: _____
20. Submit a **Termination of a Remedy Operation Status**, pursuant to 310 CMR 40.0893(6).(check one)
- a. Submit a notice indicating ROS performance standards have not been met. A plan and timetable pursuant to 310 CMR 40.0893(6)(b) for resuming the ROS are attached.
- b. Submit a notice of Termination of ROS.
21. Submit a **Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
- Specify the outcome of Phase V activities: (check one)
- a. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
- b. The requirements for a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.
22. Submit a **Revised Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
23. Submit a **Temporary Solution Status Report**, pursuant to 310 CMR 40.0898.
24. Submit a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).
- a. Status of Site: (check one)
- i. Phase IV ii. Phase V iii. Remedy Operation Status iv. Temporary Solution



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

C. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B indicates that a **Phase I, Phase II, Phase III, Phase IV or Phase V Completion Statement and/or a Termination of a Remedy Operation Status** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that a **Phase II Scope of Work or a Phase IV Remedy Implementation Plan** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that an **As-Built Construction Report, a Remedy Operation Status, a Phase IV, Phase V or Temporary Solution Status Report, a Status Report to Maintain a Remedy Operation Status, a Transfer or Modification of Persons Maintaining a Remedy Operation Status and/or a Remedial Monitoring Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

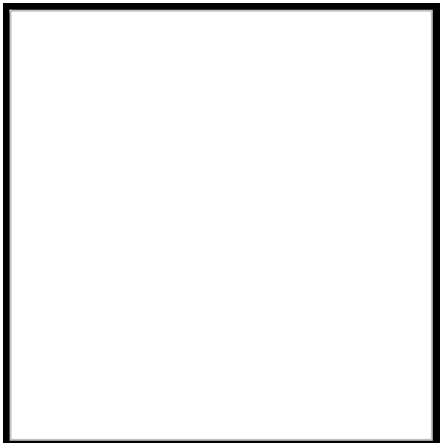
1. LSP#: 9719

2. First Name: ILEENS 3. Last Name: GLADSTONE

4. Telephone: 7817214012 5. Ext.: _____ 6. Email: igladstone@geiconsultants.com

7. Signature: _____

8. Date: _____
(mm/dd/yyyy)

9. LSP Stamp: 



COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

D. PERSON UNDERTAKING RESPONSE ACTIONS:

1. Check all that apply: a. change in contact name b. change of address c. change in the person undertaking response actions
2. Name of Organization: CITY OF LAWRENCE
3. Contact First Name: PEDRO 4. Last Name: SOTO
5. Street: 12 METHUEN STREET 6. Title: PLANNING DIRECTOR
7. City/Town: LAWRENCE 8. State: MA 9. ZIP Code: 018400000
10. Telephone: 9786203501 11. Ext: _____ 12. Email: psoto@cityoflawrence.com

E. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RESPONSE ACTIONS: Check here to change relationship

1. RP or PRP a. Owner b. Operator c. Generator d. Transporter
 e. Other RP or PRP Specify: _____
2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
4. Any Other Person Undertaking Response Actions Specify Relationship: _____

F. REQUIRED ATTACHMENT AND SUBMITTALS:

1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of any Phase Reports to DEP.
3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase III Remedial Action Plan.
4. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase IV Remedy Implementation Plan.
5. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of any field work involving the implementation of a Phase IV Remedial Action.
6. If submitting a Transfer of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for the person making this submittal (transferee) is attached.
7. If submitting a Modification of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for each new person making this submittal is attached.
8. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to: BWSC.eDEP@state.ma.us.
9. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

G. CERTIFICATION OF PERSON UNDERTAKING RESPONSE ACTIONS:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

>if Section B indicates that this is a **Modification of a Remedy Operation Status (ROS)**, I attest under the pains and penalties of perjury that I am fully authorized to act on behalf of all persons performing response actions under the ROS as stated in 310 CMR 40.0893(5)(d) to receive oral and written correspondence from MassDEP with respect to performance of response actions under the ROS, and to receive a statement of fee amount as per 4.03(3).

I understand that any material received by the Primary Representative from MassDEP shall be deemed received by all the persons performing response actions under the ROS, and I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate or incomplete information.

2. By: _____ 3. Title: PLANNING DIRECTOR
Signature

4. For: CITY OF LAWRENCE 5. Date: _____
(Name of person or entity recorded in Section D) (mm/dd/yyyy)

6. Check here if the address of the person providing certification is different from address recorded in Section D.

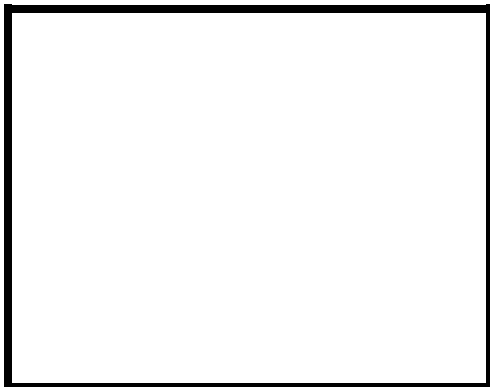
7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)



ATTACHMENT TO BWSC108
QUESTION F.1.
RTN 3-18126

Investigations conducted on Lot 2 by GEI between July and September 2019 and in March 2020 were conducted on behalf of the City of Lawrence under an EPA Brownfields Assessment Grant for Lot 2. The investigations were conducted in accordance with Site-specific Quality Assurance Project Plan (QAPP) Addendums dated July 2019 and February 2020 prepared by GEI and approved by EPA.

Investigations on Lot 1 conducted by GEI in March 2020 were conducted on behalf of the City of Lawrence under an EPA Brownfields Cleanup Grant. The investigations were conducted in accordance with Site-specific Quality Assurance Project Plan (QAPP) Addendum dated March 11, 2020 prepared by GEI and approved by EPA.

Investigations on Lot 1 by Credere from September 2019 through January 2020 were conducted on behalf of the City of Lawrence under a grant from the Merrimack Valley Planning Commission (MVPC). The sampling and analysis were conducted in accordance with a Site-Specific Quality Assurance Project Plan (QAPP) Addendum to Credere's Generic Brownfields QAPP, dated August 26, 2019 and a November 27, 2019 Amendment.

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix B

Public Notice Letters and Copy of Legal Notice



Consulting August 18, 2020
Engineers and Project 1802441
Scientists

Dr. Joel Gorn, MD, Chairman
Lawrence Board of Health
200 Common Street
Lawrence, MA 01840

Dear Dr. Joel Gorn:

**Re: Revised Phase II Comprehensive Site Assessment and Revised Tier Classification
Former Tombarello Property
207 Marston Street
Lawrence, Massachusetts
MassDEP RTN: 3-18126**

GEI Consultants, Inc. is notifying your office that a Revised Phase II Comprehensive Site Assessment (CSA) and Revised Tier Classification have been submitted to the Massachusetts Department of Environmental Protection (MassDEP) through eDEP, MassDEP's on-line filing system, for the Former Tombarello Property located at 207 Marston Street in Lawrence, Massachusetts. GEI prepared the Phase II CSA Update and Revised Tier Classification on behalf of the City of Lawrence. This notification is made in fulfillment of the public notice requirements of the Massachusetts Contingency Plan (MCP; 310 CMR 40.1403).

A Notice of Tier Re-Classification will be published in the legal section of the Eagle Tribune. A copy of the notice that will be published is attached as is a copy of the disposal site map.

You can obtain a copy of the Revised Phase II CSA and Revised Tier Classification through the MassDEP website at <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> by referencing Release Tracking Number (RTN) 3-18126, or at MassDEP Northeast Regional Office, 205B Lowell Street, Wilmington, Massachusetts, 978-694-3200.

As required under the MCP, a summary of the findings and conclusions of the Phase II CSA are provided below.

Phase II CSA

- The Site includes the 207 Marston Street property in Lawrence, Massachusetts (the Property), a portion of a MassDOT easement east of the Property, and portions of residential properties that abut the Property to the north.
- Contamination in Site soil includes PCBs, VOCs, petroleum hydrocarbons, PAHs, and metals.
- Contamination in Site groundwater includes VOCs, PAHs, and metals.
- The source of Site contamination is the historic operation of the Property as a scrap metals recycling yard. There are no ongoing releases.

- The horizontal extent of Site contamination has been determined by diminishing concentrations of contaminants in soil and groundwater.
- The vertical extent of Site contamination is limited to fill.
- Site contaminants, including PCBs, metals, and EPH fractions, have been detected in sediments in the Merrimack River. However, it has not been confirmed if Site contamination is the source of contamination in the Merrimack River.

Risk Characterization

Human Health Risk Characterization

- GEI assumed an AUL will be implemented at the Property to restrict future single-family residential use of the Property.
- Based on the results of a Method 1 Risk Characterization, conditions at the Property pose a significant risk of harm to human health for current and future human receptors.

Safety Risk Characterization

- Based on observations and information collected during environmental investigations, conditions at the Property pose a potential risk of harm to public safety; however, the Property is fenced, gated, and locked to restrict access and conditions that pose a potential risk to public safety at the Property will be addressed as part of final Site cleanup.

Public Welfare

- Based on observations and information collected during environmental investigations, no community near the Property experiences adverse impacts to public welfare under current or anticipated future conditions. However, average concentrations of PCBs at a PCB hot spot exceed the applicable soil UCL. Therefore, conditions at the Property pose a risk of harm to public welfare under future conditions.

Stage I Environmental Screening

- The Property is currently a vacant, industrial lot with historic structures, concrete pads, and paved areas present throughout the Property. The Property is surrounded by residential and commercial land use with no nearby areas of open land. There are no species of concern, threatened species, or endangered species at the Property. The Property contains no surface water bodies or wetlands.
- As a result of the developed nature of the Property, the Property does not constitute viable habitat sufficient to support a balanced terrestrial community. Based on a Stage I Environmental Screening, we concluded that a Stage II Environmental Risk Characterization is not required because there are no complete exposure pathways to soil and groundwater for wildlife receptors and a condition of NSR of harm to the environment exists at the Property.
- Risk of harm to environmental receptors in the Merrimack River has not been fully evaluated.


Revised Tier Classification

With the installation and maintenance of a fence at the Site perimeter, there is no longer an Imminent Hazard and the Site does not meet any of the Tier I Criteria. Therefore, the Site is being reclassified as a Tier II Site.

Please contact me at 781.721.4012 or igladstone@geiconsultants.com, if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.



Heen S. Gladstone, P.E., LSP, LEED AP
Vice President

LAL/ISG:jam

Enclosures

c: MassDEP – Northeast Regional Office

B:\Working\LAWRENCE, CITY OF\1802441 Former Tombarello\01_ADMIN\PhII CSA TC Revised\App B - Public Notice-Legal Notice\Public Notice Ltrs.docx



Consulting
Engineers and
Scientists

August 18 2020
Project 1802441

The Honorable Daniel Rivera
200 Common Street, 3rd Floor, Room 309
Lawrence, MA 01840

Dear Mayor Rivera:

**Re: Phase II Comprehensive Site Assessment Update and Revised Tier Classification
Former Tombarello Property
207 Marston Street
Lawrence, Massachusetts
MassDEP RTN: 3-18126**

GEI Consultants, Inc. is notifying your office that a Phase II Comprehensive Site Assessment (CSA) update and Revised Tier Classification have been submitted to the Massachusetts Department of Environmental Protection (MassDEP) through eDEP, MassDEP's on-line filing system, for the Former Tombarello Property located at 207 Marston Street in Lawrence, Massachusetts. GEI prepared the Phase II CSA Update and Revised Tier Classification on behalf of the City of Lawrence. This notification is made in fulfillment of the public notice requirements of the Massachusetts Contingency Plan (MCP; 310 CMR 40.1403).

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As required under the MCP, a summary of the findings and conclusions of the Phase II CSA are provided below.

Phase II CSA

- The Site includes the 207 Marston Street property in Lawrence, Massachusetts (the Property), a portion of a MassDOT easement east of the Property, and portions of residential properties that abut the Property to the north.
- Contamination in Site soil includes PCBs, VOCs, petroleum hydrocarbons, PAHs, and metals.
- Contamination in Site groundwater includes VOCs, PAHs, and metals.
- The source of Site contamination is the historic operation of the Property as a scrap metals recycling yard. There are no ongoing releases.

- The horizontal extent of Site contamination has been determined by diminishing concentrations of contaminants in soil and groundwater.
- The vertical extent of Site contamination is limited to fill.
- Site contaminants, including PCBs, metals, and EPH fractions, have been detected in sediments in the Merrimack River. However, it has not been confirmed if Site contamination is the source of contamination in the Merrimack River.

Risk Characterization

Human Health Risk Characterization

- GEI assumed an AUL will be implemented at the Property to restrict future single-family residential use of the Property.
- Based on the results of a Method 1 Risk Characterization, conditions at the Property pose a significant risk of harm to human health for current and future human receptors.

Safety Risk Characterization

- Based on observations and information collected during environmental investigations, conditions at the Property pose a potential risk of harm to public safety; however, the Property is fenced, gated, and locked to restrict access and conditions that pose a potential risk to public safety at the Property will be addressed as part of final Site cleanup.

Public Welfare

- Based on observations and information collected during environmental investigations, no community near the Property experiences adverse impacts to public welfare under current or anticipated future conditions. However, average concentrations of PCBs at a PCB hot spot exceed the applicable soil UCL. Therefore, conditions at the Property pose a risk of harm to public welfare under future conditions.

Stage I Environmental Screening

- The Property is currently a vacant, industrial lot with historic structures, concrete pads, and paved areas present throughout the Property. The Property is surrounded by residential and commercial land use with no nearby areas of open land. There are no species of concern, threatened species, or endangered species at the Property. The Property contains no surface water bodies or wetlands.
- As a result of the developed nature of the Property, the Property does not constitute viable habitat sufficient to support a balanced terrestrial community. Based on a Stage I Environmental Screening, we concluded that a Stage II Environmental Risk Characterization is not required because there are no complete exposure pathways to soil and groundwater for wildlife receptors and a condition of NSR of harm to the environment exists at the Property.
- Risk of harm to environmental receptors in the Merrimack River has not been fully evaluated.


Revised Tier Classification

With the installation and maintenance of a fence at the Site perimeter, there is no longer an Imminent Hazard and the Site does not meet any of the Tier I Criteria. Therefore, the Site is being reclassified as a Tier II Site.

Please contact me at 781.721.4012 or igladstone@geiconsultants.com, if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.



Heen S. Gladstone, P.E., LSP, LEED AP
Vice President

LAL/ISG:jam

Enclosures

c: MassDEP – Northeast Regional Office

B:\Working\LAWRENCE, CITY OF\1802441 Former Tombarello\01_ADMIN\PhII CSA TC Revised\App B - Public Notice-Legal Notice\Public Notice Ltrs.docx

NOTICE OF TIER RE-CLASSIFICATION

Tombarello and Sons Inc Hoffman Ave
207 Marston Street
RTN 3-18126

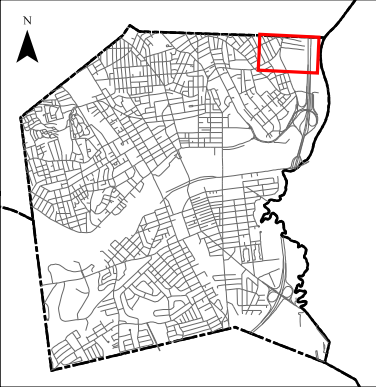
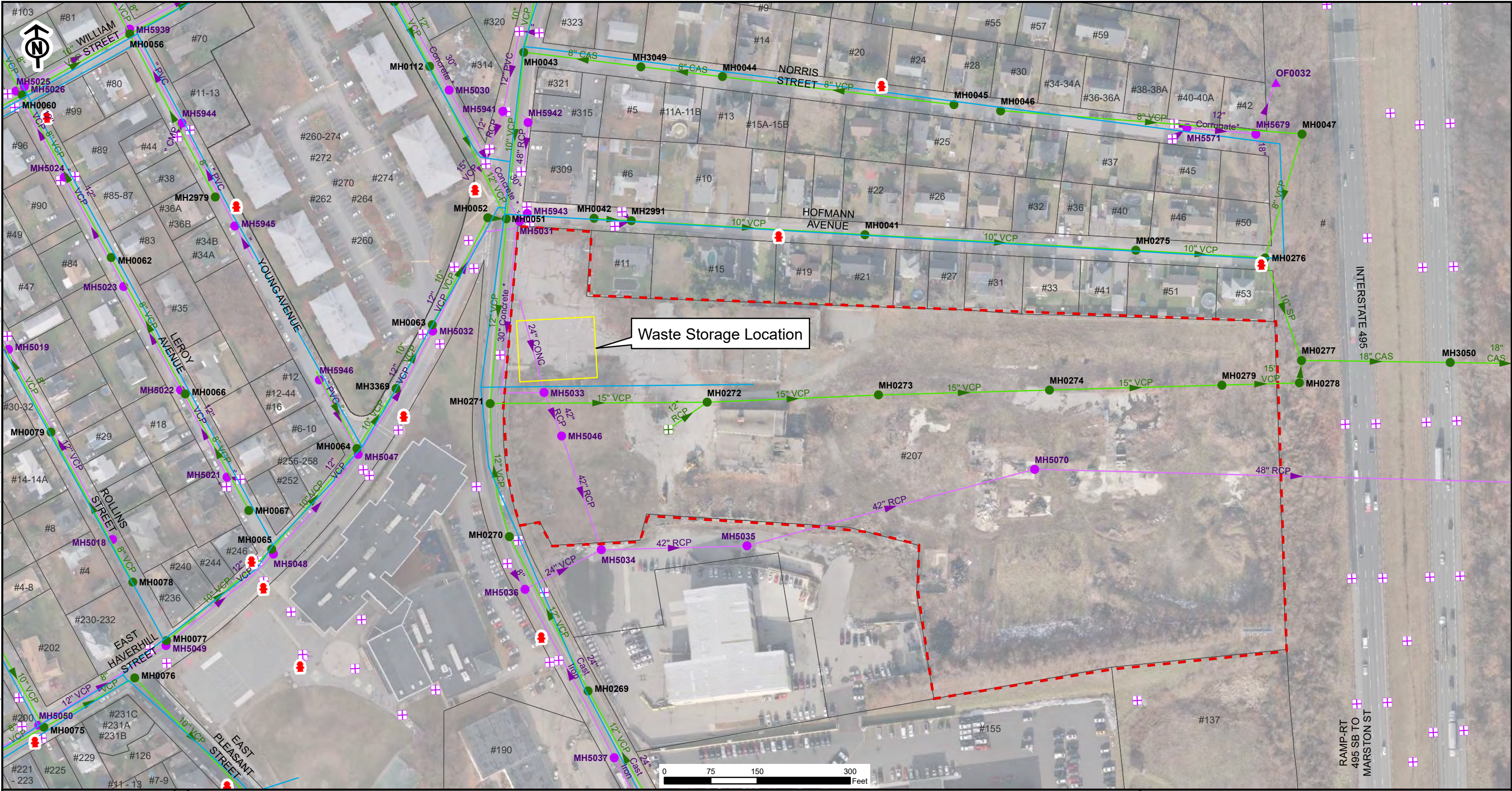
A release of oil and/or hazardous materials has occurred at this location, which is a disposal site as defined by M.G.L. c. 21E, § 2 and the Massachusetts Contingency Plan, 310 CMR 40.0000. To evaluate the release, a Revised Phase II Comprehensive Site Assessment was performed pursuant to 310 CMR 40.0480. The site has previously been classified as Tier I pursuant to 310 CMR 40.0500. However, the Site does not meet the Tier I inclusionary criteria in 310 CMR 40.0520(2) and **the Site is being reclassified as Tier II**. On [DATE], **the City of Lawrence** filed a Tier II Classification Submittal with the Department of Environmental Protection (MassDEP). To obtain more information on this disposal site, please contact **Pedro Soto, City of Lawrence, 12 Methuen Street, 978-620-3501**. The Tier Classification Submittal and the disposal site file can be viewed at MassDEP website using **Release Tracking Number (RTN) 3-18126** at <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> or at **MassDEP, Northeast Regional Office 205B Lowell Street Wilmington, MA 01887, (978) 694-3200**. Additional public involvement opportunities are available under 310 CMR 40.1403(9) and 310 CMR 40.1404.

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix C

Utility Plans

Figure Exported: 9/25/2017, By: kmesser, Using: \\woodardcurran.net\shared\Projects\228526\Lawrence MA - Sewer Collection System Improvement\003 On-Call\Tombarello Site (207 Marston) \Figure 2 - 207 Marston Street Site Plan.mxd



LEGEND

- Parcel Boundary
- Marston Street Subject Property
- Sewer Manhole
- ⊕ Sewer Structure
- Sewer Gravity Pipe
- Sewer Force Main
- Drainage Manhole
- ⊕ Drainage Catch Basin
- ▲ MS4 Outfall
- Gravity Main
- Underdrain
- ⚡ Water Hydrants
- Water Mains

207 Marston Street

SITE PLAN

Woodard & Curran shall assume no liability for any of the following:
 1. Any errors, omissions, or inaccuracies in the information provided regardless of how caused or; 2. Any decision or action taken or not taken by the reader in reliance upon any information or data furnished hereunder. Data Sources:

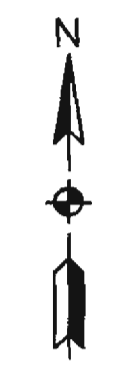
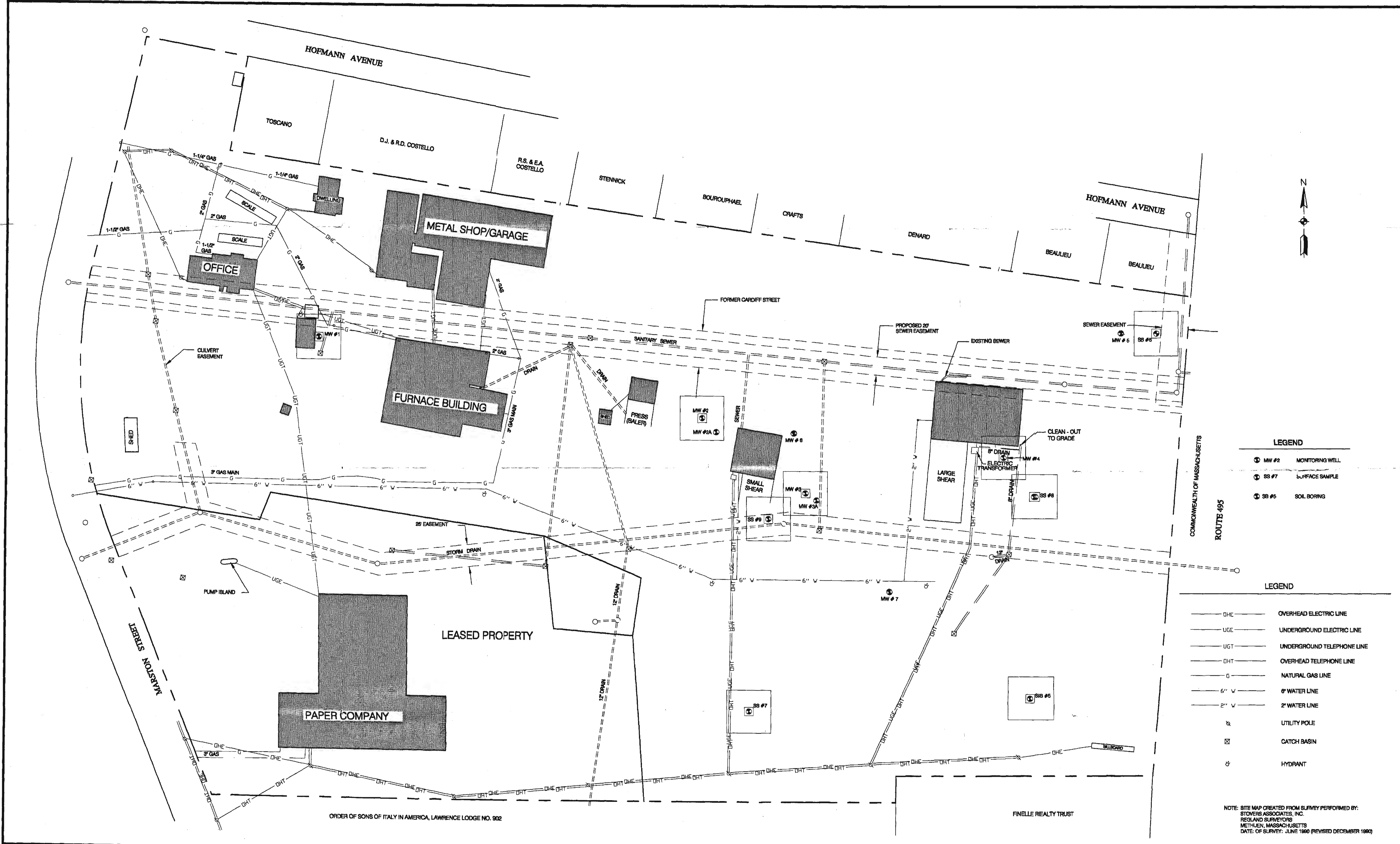


SCALE: 1 inch = 150 feet

DATE: SEPTEMBER 2017

PROJECT #: 228526

DRAWN BY: KKM



- LEGEND**
- ⊕ MW #2 MONITORING WELL
 - ⊕ SS #7 SURFACE SAMPLE
 - ⊕ SB #5 SOIL BORING

- LEGEND**
- DHE — OVERHEAD ELECTRIC LINE
 - UGE — UNDERGROUND ELECTRIC LINE
 - UGT — UNDERGROUND TELEPHONE LINE
 - DHT — OVERHEAD TELEPHONE LINE
 - G — NATURAL GAS LINE
 - 6" W — 6" WATER LINE
 - 2" W — 2" WATER LINE
 - ⊗ UTILITY POLE
 - ⊗ CATCH BASIN
 - ⊗ HYDRANT

NOTE: SITE MAP CREATED FROM SURVEY PERFORMED BY:
 STOVERS ASSOCIATES, INC.
 REGLAND SURVEYORS
 METHUEN, MASSACHUSETTS
 DATE OF SURVEY: JUNE 1990 (REVISED DECEMBER 1990)

NO.	1	ADDED NEW MONITORING WELLS - 5, 6, & 7	7/30/99	JCT
		REVISIONS	DATE	ENGR

SCALE: 1" = 50'

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

W.Z. BAUMGARTNER & ASSOCIATES, INC.
 ENVIRONMENTAL ENGINEERS & CONSULTANTS

310 WILLIAMSON SQUARE
 P.O. BOX 880389 (37088-0389)
 FRANKLIN, TENNESSEE 37064
 615-595-0025

SEAL:

DRAWN BY: RILW/CLG

CHECKED BY: JC

ENGINEER: WZB

DATE: 8/10/98

JOHN C. TOMBARELLO PROPERTY
 FACILITY MAP WITH SAMPLING POINTS

AMERICAN RECYCLING
 LAWRENCE, MASSACHUSETTS

SCALE: 1" = 50'

PROJECT NO.: 98091

SHEET NO.: 2

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix D

Historic Data Tables and Figures

TPH
Cadmium - 60
PCB - 10

Sample	Total VOCs, ppm
EX-5	415
EX-6	13.8

The above headspace concentrations indicate that significant VOCs are present in the soil samples collected.

The composited stockpile soil sample was analyzed for VOCs by EPA Method 8260, TPH by EPA Method 8100M, flash point, reactivity, polychlorinated biphenyls (PCBs), free liquids, pH, total lead, total arsenic, total cadmium, total chromium, and total mercury, TCLP RCRA 8 metals, and TCLP VOCs. The results of analysis are presented in **Table 2** below, compared with MCP Reportable Concentrations (RC), and the laboratory reports for these and all other sets of analysis are presented in **Attachment 1**. The stockpile sample is identified as STCKPL 1-3 in the laboratory reports.

TABLE 2
Results of Analysis for Disposal Parameters
of Composited Stockpile Sample

Analyte Detected	Concentration, ppm	Reportable Concentration for S-1 Soil
Benzene	0.12	10
Ethylbenzene	0.12	80
Tetrachloroethene	1.8	0.5
Toluene	0.44	90
Total Xylenes	9.7	500
Methyl (t) Butyl Ether	0.22	0.3
Cadmium	162	30
Chromium	104	1000
Lead	961	300
Mercury	1.86	20
TPH	6900 as other oil; 750 unidentified	200
Total Polychlorinated Biphenyls	13.1	2
Flash point	> 200°F	--

Analyte Detected	Concentration, ppm	Reportable Concentration for S-1 Soil
pH	7.54	--
TCLP Barium	0.829	--
TCLP Cadmium	0.115	--
TCLP Lead	14.0	--

Notes to Table 2:

- 1.) **Bold text indicates that sample concentration exceeds its respective RC.**
- 2.) **Dashed lines indicate Reportable Concentrations not applicable.**
- 3.) **TCLP = toxic characteristic leaching procedure, a determination whether a solid is considered to be a hazardous waste (all results were below standards).**

As is seen from the above table, several of the constituents identified in the stockpiled soil sample were present in concentrations exceeding their respective RCs. These constituents were tetrachloroethene, cadmium, lead, TPH, and polychlorinated biphenyls (PCBs). Moreover, the TCLP lead concentration caused the soil to be a RCRA regulated waste.

Following this discovery, the sample of heat transfer oil was analyzed for the presence of each of the constituents exceeding RCs. The results of these analyses are presented in **Table 3** below.

TABLE 3
Results of Analysis of Heat Transfer Oil for Constituents
in Soil Stockpile Exceeding RCs

Analyte	Concentration, mg/kg	Reportable Concentration in Soil, mg/kg
TPH	1,000,000	200
PCBs	ND (<1)	2
Tetrachloroethene	ND (<0.3402)	0.5
Lead	176	300
Cadmium	1.76	30

- Notes:**
- 1.) **ND = not detected; detection limit presented in parentheses.**
 - 2.) **mg/kg = milligrams per kilogram or parts per million by weight.**
 - 3.) **Reportable Concentration for S-1 soil.**

As is seen in the above table, neither PCBs nor tetrachloroethene was detected in the oil sample. Although lead and cadmium were detected in the oil, their concentrations were found to be lower than the concentrations detected in the stockpiled soil sample and lower than RCs for lead and

cadmium. Because the lead and cadmium concentrations would only become lower upon contact with soil (which adds weight to the oil matrix, thereby reducing the concentration of the contaminants), the heat transfer oil is not the cause of the lead and cadmium in the soil stockpile to exceed their respective RCs. It is NEDT's conclusion, therefore, that the above constituents, other than TPH, were already present in the stockpile soil sample in concentrations exceeding RCs as a pre-existing condition resulting from the facility's operations and not from the subject release. The heat transfer oil was a contributing source of TPH, and soil excavation was conducted to remove impacts caused by the heat transfer oil.

Because of the level of cadmium and PCBs detected at a location within 500 feet of a residence and playground, an evaluation of a potential for a condition of Imminent Hazard is required by the MCP, pursuant to 310 CMR 40.0321(2)(b). This evaluation was conducted by Tombarello & Sons and it was determined that a condition of Imminent Hazard did not exist, as described in **Section 4.4**. NEDT concurs with this determination, as related to the criteria presented in the section of the MCP cited.

No I.H. Evaluation Presented

The results of analysis of the soil samples collected from the initial round of sampling are presented in **Table 4**. EPH analysis was conducted for samples TP-1 and TP-2, in anticipation of utilizing MCP Risk Characterization Standards in support of this RAO Statement. (Risk Characterization Standards apply to EPH parameter concentrations, but not to TPH concentrations.) However, as described later in this report, Risk Characterization Standards are not utilized herein and the EPH results for TP-1 and TP-2 are not presented in Table 4, but are instead reported in **Attachment 1**.

TABLE 4
Results of Analysis of Soil Samples
Initial Sampling Round
May 21, 1998

Sample	TPH, ppm	Lead, ppm	Cadmium, ppm
TP-1	9090, unidentified	920	6.83
TP-2	3700, unidentified	4170	9.49
EX-1	1100, as gasoline; 6500 as other oil	--	--
EX-2	6500 as other oil; 1300 unidentified	--	--
EX-3	620 as gasoline; 5300 as other oil	--	--
EX-4	420 as gasoline; 6800 as other oil	--	--

Sample	TPH, ppm	Lead, ppm	Cadmium, ppm
EX-5	5100 as gasoline; 9300 as other oil	--	--
EX-6	4700 as other oil; 280 unidentified	--	--

- Notes: 1.) Dashed lines indicate that listed analysis was not conducted for sample identified.
 2.) EPH analysis also conducted for TP-1 and TP-2, whose results are reported in the laboratory reports in Attachment 1.

As is seen in Table 4, each of the samples collected exhibited significant TPH concentrations, exceeding the TPH RC of 200 ppm. However, based on the TPH concentrations exhibited by the background samples, TP-1 and TP-2, and on the identified presence of gasoline constituents, NEDT requested that Spectrum conduct a comparison of chromatograms between the heat transfer oil sample and the chromatograms of the samples reported in Table 4. This comparison was performed by Mr. Hanibal C. Tayeh, Laboratory Director, and it was his opinion that none of the chromatograms of the petroleum constituents in TP-1, TP-2, and EX-1 through EX-6 matched the heat transfer oil chromatogram. A letter presenting Mr. Tayeh's evaluation of the petroleum chromatograms and the chromatograms themselves are presented in Attachment 2.

Based on the PID screening that was utilized to select soil samples for laboratory analysis, it is NEDT's opinion that samples EX-1 through EX-6 adequately represent the condition of the base of the excavation. Based on the evaluation of chromatograms conducted by Mr. Tayeh, it is NEDT's opinion that the vertical extent of contamination was removed to a level representing background conditions (i.e. the absence of heat transfer oil) and that the petroleum remaining in the soil is from sources other than the subject release.

NEDT conducted a second round of soil sampling at the release area to determine whether the horizontal extent of contamination was reduced to background by the excavation activities conducted and the results of this sampling round are presented in Section 4.5.

4.4 Evaluation of Potential Condition of Imminent Hazard

Pursuant to 310 CMR 40.0321(2)(b), if PCBs are detected in soil at a concentration greater than 10 ppm and cadmium greater than 60 ppm at the ground surface or within 6 inches of the ground surface and within 500 feet of a residential dwelling or playground, and access by children is not controlled by a physical barrier, a condition of Imminent Hazard exists for the location in question, requiring notification to the DEP within two hours of knowledge of site conditions. The release area was within 500 feet of both a residence and a soccer field and the cadmium and PCB Imminent Hazard threshold concentrations were exceeded at that location. However Tombarello & Sons, in consultation with legal counsel and an environmental consultant,

determined that the fences and berms surrounding its facility constituted a physical barrier such that access to the property by children was controlled and therefore a condition of Imminent Hazard did not exist. NEDT similarly concluded that adequate measures and barriers are in place to control the presence of children from the property.

4.5 Results of Second Round of Analysis

It was determined by the first round of soil sampling and analysis that the vertical extent of soil impacted by the heat transfer oil had been removed through excavation. The purpose of the second round of sampling and analysis was to determine whether the horizontal extent of the heat transfer oil had been removed as well.

The second round of sampling was conducted on June 4, 1998. The soil within the side walls of the excavation was disturbed by means of a trowel and the ambient air around the disturbed soil was analyzed for total VOCs using a PID calibrated to the benzene response factor. The side walls were grouped into 6 sections and each section was screened independently. A sample was collected from the area which exhibited the highest ambient total VOC concentration within each section. The locations of the samples are presented in **Figure 3**.

The six samples collected were identified as SWALL1 through SWALL6 and were submitted to Spectrum for TPH analysis and for comparison of chromatograms. The total VOCs for each sample using the jar headspace technique and their TPH results are presented in **Table 5** and their laboratory reports are presented in **Attachment 1**. As is seen from the table, significant concentrations of petroleum are present in the soil samples.

TABLE 5
Results of Analysis of Soil Samples
Second Round Sampling
June 4, 1998

Sample	Jar Headspace Total VOC concentration, ppm	TPH, ppm
SWALL1	71.1	4600, unidentified
SWALL2	616	2500, unidentified
SWALL3	18.4	2700, unidentified
SWALL4	25.0	2600, unidentified
SWALL5	6.2	4200, unidentified
SWALL6	12.9	4400, unidentified

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
SEMIVOLATILE ORGANICS	
Acenaphthene	2.28
Acenaphthylene	< 1.65
Anthracene	6.71
Benzo(a)anthracene	24.6
Benzo(a)pyrene	15.3
Benzo(b)fluoranthene	19.3
Benzo(g,h,i)perylene	3.94
Benzo(k)fluoranthene	8.96
4-Bromophenylphenylether	< 1.65
Butylbenzylphthalate	< 1.65
Carbazole	2.41
4-Chloro-3-methylphenol	< 1.65
4-Chloroaniline	< 1.65
bis(2-Chloroethoxy)methane	< 1.65
bis(2-Chloroethyl)ether	< 1.65
bis(2-Chloroisopropyl)ether	< 1.65
2-Chloronaphthalene	< 1.65
2-Chlorophenol	< 1.65
4-Chlorophenylphenylether	< 1.65
Chrysene	25.0
Dibenzofuran	< 1.65
Dibenz(a,h)anthracene	< 1.65
1,2-Dichlorobenzene	< 1.65
1,3-Dichlorobenzene	< 1.65
1,4-Dichlorobenzene	< 1.65
3,3'-Dichlorobenzidine	< 4.12
2,4-Dichlorophenol	< 1.65
Diethylphthalate	< 1.65

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
2,4-Dimethylphenol	< 1.65
Dimethylphthalate	< 1.65
Di-n-butylphthalate	< 1.65
4,6-Dinitro-2-methylphenol	< 4.12
2,4-Dinitrophenol	< 4.12
2,4-dinitrotoluene	< 1.65
2,6-Dinitrotoluene	< 1.65
Di-n-octylphthalate	< 1.65
Fluoranthene	42.9
Fluorene	2.69
Hexachlorobenzene	< 1.65
Hexachlorobutadiene	< 1.65
Hexachlorocyclopentadiene	< 1.65
Hexachloroethane	< 1.65
Indeno(1,2,3-cd)pyrene	4.39
Isophorone	< 1.65
2-Methylnaphthalene	< 1.65
2-Methylphenol	< 1.65
m,p-Methylphenol	< 1.65
Naphthalene	< 1.65
2-Nitroaniline	< 4.12
3-Nitroaniline	< 4.12
4-Nitroaniline	< 4.12
Nitrobenzene	< 1.65
2-Nitrophenol	< 1.65
4-Nitrophenol	< 4.12
N-nitrosodi-n-propylamine	< 1.65
N-nitrosodiphenylamine	< 1.65
Pentachlorophenol	< 4.12

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Phenanthrene	29.4
Phenol	< 1.65
Pyrene	56.0
Bis(2-ethylhexyl)phthalate	< 1.65
1,2,4-Trichlorobenzene	< 1.65
2,4,5-Trichlorophenol	< 4.12
2,4,6-Trichlorophenol	< 1.65
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000
1,2-Dibromo-3-chloropropane	< 0.1000

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000
1,1,1,2-Tetrachloroethane	< 0.1000

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	0.3000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.1665
Aroclor 1221	< 0.3330
Aroclor 1232	< 0.1665
Aroclor 1242	< 0.1665
Aroclor 1248	3.097
Aroclor 1254	< 0.1665
Aroclor 1260	3.913
METALS	
Arsenic	4.76
Barium	45.5
Cadmium	1.90

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Chromium	15.2
Lead	146.
Mercury	0.32
Selenium	< 0.95
Silver	< 0.95

EXHIBIT NO. 3-K

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 2-4 (49791)
METALS	
Arsenic	3.22
Barium	25.6
Cadmium	2.62
Chromium	10.1
Lead	712.
Mercury	< 0.10
Selenium	< 1.01
Silver	2.21

EXHIBIT NO. 3-L

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER

SB1 9-11
(49770)

ORGANIC PARAMETERS

TPH (Gasoline Range)

< 5.00

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 8.33
Acenaphthylene	< 8.33
Anthracene	< 8.33
Benzo(a)anthracene	< 8.33
Benzo(a)pyrene	< 8.33
Benzo(b)fluoranthene	< 8.33
Benzo(g,h,i)perylene	< 8.33
Benzo(k)fluoranthene	< 8.33
4-Bromophenylphenylether	< 8.33
Butylbenzylphthalate	< 8.33
Carbazole	< 8.33
4-Chloro-3-methylphenol	< 8.33
4-Chloroaniline	< 8.33
bis(2-Chloroethoxy)methane	< 8.33
bis(2-Chloroethyl)ether	< 8.33
bis(2-Chloroisopropyl)ether	< 8.33
2-Chloronaphthalene	< 8.33
2-Chlorophenol	< 8.33
4-Chlorophenylphenylether	< 8.33
Chrysene	< 8.33
Dibenzofuran	< 8.33
Dibenz(a,h)anthracene	< 8.33
1,2-Dichlorobenzene	< 8.33
1,3-Dichlorobenzene	< 8.33
1,4-Dichlorobenzene	< 8.33
3,3'-Dichlorobenzidine	< 20.8
2,4-Dichlorophenol	< 8.33

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Diethylphthalate	< 8.33
2,4-Dimethylphenol	< 8.33
Dimethylphthalate	< 8.33
Di-n-butylphthalate	< 8.33
4,6-Dinitro-2-methylphenol	< 20.8
2,4-Dinitrophenol	< 20.8
2,4-dinitrotoluene	< 8.33
2,6-Dinitrotoluene	< 8.33
Di-n-octylphthalate	< 8.33
Fluoranthene	< 8.33
Fluorene	< 8.33
Hexachlorobenzene	< 8.33
Hexachlorobutadiene	< 8.33
Hexachlorocyclopentadiene	< 8.33
Hexachloroethane	< 8.33
Indeno(1,2,3-cd)pyrene	< 8.33
Isophorone	< 8.33
2-Methylnaphthalene	< 8.33
2-Methylphenol	< 8.33
m,p-Methylphenol	< 8.33
Naphthalene	< 8.33
2-Nitroaniline	< 20.8
3-Nitroaniline	< 20.8
4-Nitroaniline	< 20.8
Nitrobenzene	< 8.33
2-Nitrophenol	< 8.33
4-Nitrophenol	< 20.8
N-nitrosodi-n-propylamine	< 8.33
N-nitrosodiphenylamine	< 8.33

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Pentachlorophenol	< 20.8
Phenanthrene	< 8.33
Phenol	< 8.33
Pyrene	12.1
Bis(2-ethylhexyl)phthalate	15.8
1,2,4-Trichlorobenzene	< 8.33
2,4,5-Trichlorophenol	< 20.8
2,4,6-Trichlorophenol	< 8.33
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	0.6194
Aroclor 1254	< 0.0333
Aroclor 1260	0.7659
METALS	
Arsenic	2.74
Barium	13.3

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Cadmium	< 0.98
Chromium	6.46
Lead	26.8
Mercury	0.43
Selenium	< 0.98
Silver	< 0.98

EXHIBIT NO. 3-N

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 2-4 (49772)
METALS	
Arsenic	3.18
Barium	16.7
Cadmium	< 0.99
Chromium	8.55
Lead	9.74
Mercury	< 0.10
Selenium	< 0.99
Silver	< 0.99

EXHIBIT NO. 3-0

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.330
Acenaphthylene	< 0.330
Anthracene	0.493 ✓
Benzo(a)anthracene	1.96
Benzo(a)pyrene	1.71
Benzo(b)fluoranthene	2.07
Benzo(g,h,i)perylene	0.455
Benzo(k)fluoranthene	1.49
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	< 0.330
Carbazole	< 0.330
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	2.14
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Diethylphthalate	< 0.330
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	2.70
Fluorene	< 0.330
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	0.480
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330

EXHIBIT NO. 3-0

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Pentachlorophenol	< 0.825
Phenanthrene	1.99
Phenol	< 0.330
Pyrene	4.24
Bis(2-ethylhexyl)phthalate	< 0.330
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

EXHIBIT NO. 3-0

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 3.330
Aroclor 1221	< 6.660
Aroclor 1232	< 3.330
Aroclor 1242	< 3.330
Aroclor 1248	< 3.330
Aroclor 1254	< 3.330
Aroclor 1260	59.27
METALS	
Arsenic	9.52
Barium	333.

EXHIBIT NO. 3-0

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Cadmium	2.67
Chromium	60.4
Lead	918.
Mercury	0.97
Selenium	< 0.95
Silver	1.71

EXHIBIT NO. 3-P

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 2-4 (49775)
METALS	
Arsenic	4.04
Barium	12.5
Cadmium	< 1.01
Chromium	8.69
Lead	5.45
Mercury	< 0.10
Selenium	< 1.01
Silver	< 1.01

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
SEMIVOLATILE ORGANICS	
Acenaphthene	19.4
Acenaphthylene	< 6.67
Anthracene	36.0
Benzo(a)anthracene	58.6
Benzo(a)pyrene	32.2
Benzo(b)fluoranthene	39.5
Benzo(g,h,i)perylene	6.84
Benzo(k)fluoranthene	22.6
4-Bromophenylphenylether	< 6.67
Butylbenzylphthalate	< 6.67
Carbazole	16.2
4-Chloro-3-methylphenol	< 6.67
4-Chloroaniline	< 6.67
bis(2-Chloroethoxy)methane	< 6.67
bis(2-Chloroethyl)ether	< 6.67
bis(2-Chloroisopropyl)ether	< 6.67
2-Chloronaphthalene	< 6.67
2-Chlorophenol	< 6.67
4-Chlorophenylphenylether	< 6.67
Chrysene	60.4
Dibenzofuran	14.0
Dibenz(a,h)anthracene	< 6.67
1,2-Dichlorobenzene	< 6.67
1,3-Dichlorobenzene	< 6.67
1,4-Dichlorobenzene	< 6.67
3,3'-Dichlorobenzidine	< 16.7
2,4-Dichlorophenol	< 6.67

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Diethylphthalate	< 6.67
2,4-Dimethylphenol	< 6.67
Dimethylphthalate	< 6.67
Di-n-butylphthalate	< 6.67
4,6-Dinitro-2-methylphenol	< 16.7
2,4-Dinitrophenol	< 16.7
2,4-dinitrotoluene	< 6.67
2,6-Dinitrotoluene	< 6.67
Di-n-octylphthalate	< 6.67
Fluoranthene	118.
Fluorene	25.8
Hexachlorobenzene	< 6.67
Hexachlorobutadiene	< 6.67
Hexachlorocyclopentadiene	< 6.67
Hexachloroethane	< 6.67
Indeno(1,2,3-cd)pyrene	7.63
Isophorone	< 6.67
2-Methylnaphthalene	< 6.67
2-Methylphenol	< 6.67
m,p-Methylphenol	< 6.67
Naphthalene	< 6.67
2-Nitroaniline	< 16.7
3-Nitroaniline	< 16.7
4-Nitroaniline	< 16.7
Nitrobenzene	< 6.67
2-Nitrophenol	< 6.67
4-Nitrophenol	< 16.7
N-nitrosodi-n-propylamine	< 6.67
N-nitrosodiphenylamine	< 6.67

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Pentachlorophenol	< 16.7
Phenanthrene	143.
Phenol	< 6.67
Pyrene	141.
Bis(2-ethylhexyl)phthalate	< 6.67
1,2,4-Trichlorobenzene	< 6.67
2,4,5-Trichlorophenol	< 16.7
2,4,6-Trichlorophenol	< 6.67
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000

PESTICIDES/PCB'S/HERBICIDES

Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	< 0.0333
Aroclor 1254	< 0.0333
Aroclor 1260	0.6094

METALS

Arsenic	5.73
Barium	54.0

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Cadmium	< 0.99
Chromium	33.0
Lead	106.
Mercury	0.50
Selenium	< 0.99
Silver	< 0.99

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
SEMIVOLATILE ORGANICS	
Acenaphthene	0.367
Acenaphthylene	< 0.330
Anthracene	1.19
Benzo(a)anthracene	3.95
Benzo(a)pyrene	3.10
Benzo(b)fluoranthene	2.00
Benzo(g,h,i)perylene	0.715
Benzo(k)fluoranthene	0.718
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	0.372
Carbazole	0.442
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	4.09
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Diethylphthalate	< 0.330
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	7.28
Fluorene	0.420
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	0.826
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Pentachlorophenol	< 0.825
Phenanthrene	4.23
Phenol	< 0.330
Pyrene	9.56
Bis(2-ethylhexyl)phthalate	2.42
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0100
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon Disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0100
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
1,2-Dibromo-3-chloropropane	< 0.0020
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Cadmium	5.78
Chromium	57.4
Lead	3470
Mercury	2.13
Selenium	< 0.96
Silver	< 0.96

EXHIBIT NO. 3-S

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 4-6 (49781)
METALS	
Arsenic	3.99
Barium	16.4
Cadmium	< 1.00
Chromium	7.19
Lead	8.58
Mercury	< 0.10
Selenium	< 1.00
Silver	< 1.00

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.330
Acenaphthylene	< 0.330
Anthracene	< 0.330
Benzo(a)anthracene	< 0.330
Benzo(a)pyrene	< 0.330
Benzo(b)fluoranthene	< 0.330
Benzo(g,h,i)perylene	< 0.330
Benzo(k)fluoranthene	< 0.330
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	< 0.330
Carbazole	< 0.330
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	< 0.330
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330
Diethylphthalate	< 0.330

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	< 0.330
Fluorene	< 0.330
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	< 0.330
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330
Pentachlorophenol	< 0.825

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Phenanthrene	< 0.330
Phenol	< 0.330
Pyrene	< 0.330
Bis(2-ethylhexyl)phthalate	0.524
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0100
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon Disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0100
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0020

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	< 0.0333
Aroclor 1254	< 0.0333
Aroclor 1260	0.6793
METALS	
Arsenic	3.62
Barium	44.3
Cadmium	< 1.01

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Chromium	14.5
Lead	37.4
Mercury	< 0.10
Selenium	< 1.01
Silver	< 1.01

EXHIBIT NO. 3-U

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 4-6 (49785)
METALS	
Arsenic	4.20
Barium	19.8
Cadmium	< 0.95
Chromium	7.63
Lead	4.01
Mercury	< 0.10
Selenium	< 0.95
Silver	< 0.95

EXHIBIT NO. 3-W

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	S-8 (49788)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	21.7
TPH (Diesel Range)	2740
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	7.193
Aroclor 1254	< 0.3330
Aroclor 1260	3.397
METALS	
Arsenic	11.8
Barium	552.
Cadmium	4.95
Chromium	64.0
Lead	1110
Mercury	7.13
Selenium	< 0.95
Silver	< 0.95

EXHIBIT NO. 3-X

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	S-9 (49789)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	< 5.00
TPH (Diesel Range)	1900
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	< 0.3330
Aroclor 1254	< 0.3330
Aroclor 1260	< 0.3330
METALS	
Arsenic	4.98
Barium	52.9
Cadmium	< 0.96
Chromium	38.3
Lead	172.
Mercury	1.06
Selenium	< 0.96
Silver	< 0.96

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
Diethylphthalate	< 0.0100
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4' DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00505
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0060
Arsenic, Dissolved	< 0.005
Barium, Total	0.0540
Barium, Dissolved	0.039
Cadmium, Total	< 0.0010

EXHIBIT NO. 3-A

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-1 (49727)
Cadmium, Dissolved	< 0.0010
Chromium, Total	< 0.0050
Chromium, Dissolved	< 0.0050
Lead, Total	0.0050
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
 MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0154
Acenaphthylene	< 0.0154
Anthracene	< 0.0154
Benzo(a)anthracene	< 0.0154
Benzo(a)pyrene	< 0.0154
Benzo(b)fluoranthene	< 0.0154
Benzo(g,h,i)perylene	< 0.0154
Benzo(k)fluoranthene	< 0.0154
4-Bromophenyl-phenylether	< 0.0154
Butylbenzylphthalate	< 0.0154
Carbazole	< 0.0154
4-Chloro-3-methylphenol	< 0.0154
4-Chloroaniline	< 0.0154
Bis(2-chloroethoxy)methane	< 0.0154
Bis(2-chloroethyl)ether	< 0.0154
Bis(2-chloroisopropyl)ether	< 0.0154
2-Chloronaphthalene	< 0.0154
2-Chlorophenol	< 0.0154
4-Chlorophenyl-phenylether	< 0.0154
Chrysene	< 0.0154
Dibenzofuran	< 0.0154
Dibenz(a,h)anthracene	< 0.0154
1,2-Dichlorobenzene	< 0.0154
1,3-Dichlorobenzene	< 0.0154
1,4-Dichlorobenzene	< 0.0154
3,3'-Dichlorobenzidine	< 0.0385
2,4-Dichlorophenol	< 0.0154
Diethylphthalate	< 0.0154

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
2,4-Dimethylphenol	< 0.0154
Dimethylphthalate	< 0.0154
Di-n-Butylphthalate	< 0.0154
4,6-Dinitro-2-methylphenol	< 0.0385
2,4-Dinitrophenol	< 0.0385
2,4-dinitrotoluene	< 0.0154
2,6-Dinitrotoluene	< 0.0154
Di-n-octylphthalate	< 0.0154
Fluoranthene	< 0.0154
Fluorene	< 0.0154
Hexachlorobenzene	< 0.0154
Hexachlorobutadiene	< 0.0154
Hexachlorocyclopentadiene	< 0.0154
Hexachloroethane	< 0.0154
Indeno(1,2,3-cd)pyrene	< 0.0154
Isophorone	< 0.0154
2-Methylnaphthalene	< 0.0154
2-Methylphenol	< 0.0154
3 and 4-Methylphenol	< 0.0154
Naphthalene	< 0.0154
2-Nitroaniline	< 0.0385
3-Nitroaniline	< 0.0385
4-Nitroaniline	< 0.0385
Nitrobenzene	< 0.0154
2-Nitrophenol	< 0.0154
4-Nitrophenol	< 0.0385
N-Nitroso-Di-n-Propylamine	< 0.0154
N-Nitrosodiphenylamine	< 0.0154
Pentachlorophenol	< 0.0385

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Phenanthrene	< 0.0154
Phenol	< 0.0154
Pyrene	< 0.0154
Bis(2-ethylhexyl)phthalate	< 0.0154
1,2,4-Trichlorobenzene	< 0.0154
2,4,5-Trichlorophenol	< 0.0385
2,4,6-Trichlorophenol	< 0.0154
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0025
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.1138
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0022
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	0.0027
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	0.0041
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	0.0030
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0145
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	0.0024
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	0.0057
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00052
Aroclor 1221	< 0.00052
Aroclor 1232	< 0.00052
Aroclor 1242	< 0.00052
Aroclor 1248	< 0.00052
Aroclor 1254	< 0.00052
Aroclor 1260	< 0.00052
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00515
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	< 0.0050
Arsenic, Dissolved	< 0.005
Barium, Total	0.1770
Barium, Dissolved	0.177
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	< 0.0050
Chromium, Dissolved	< 0.0050
Lead, Total	0.0050
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0032
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	0.0033
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'-DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00510
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0530
Arsenic, Dissolved	< 0.005
Barium, Total	0.3290
Barium, Dissolved	0.049
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.1450
Chromium, Dissolved	< 0.0050
Lead, Total	0.0250
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0136
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0742
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0092
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0071
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0053
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0027
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00052
Aroclor 1221	< 0.00052
Aroclor 1232	< 0.00052
Aroclor 1242	< 0.00052
Aroclor 1248	< 0.00052
Aroclor 1254	< 0.00052
Aroclor 1260	< 0.00052
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'-DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00515
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0240
Arsenic, Dissolved	< 0.005
Barium, Total	0.1800
Barium, Dissolved	0.070
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0330
Chromium, Dissolved	< 0.0050
Lead, Total	0.0310
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0090
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	0.072

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0034
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0167
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0024
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0026
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0039
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0044
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	0.0028
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'-DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00510
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.1430
Arsenic, Dissolved	< 0.005
Barium, Total	0.9150
Barium, Dissolved	0.048
Cadmium, Total	0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.4770
Chromium, Dissolved	< 0.0050
Lead, Total	0.0580
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0060
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
 VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00050
Aroclor 1221	< 0.00050
Aroclor 1232	< 0.00050
Aroclor 1242	< 0.00050
Aroclor 1248	< 0.00050
Aroclor 1254	< 0.00050
Aroclor 1260	< 0.00050
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'-DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00500
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0210
Arsenic, Dissolved	< 0.005
Barium, Total	0.9960
Barium, Dissolved	0.108
Cadmium, Total	0.0036
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0270
Chromium, Dissolved	< 0.0050
Lead, Total	1.560
Lead, Dissolved	0.0060
Mercury, Total	0.00064

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
 MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0131
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0715
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0086
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0064
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0057
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0025
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020

PESTICIDES/PCB'S/HERBICIDES

Aldrin	< 0.00005
Aroclor 1016	< 0.00050
Aroclor 1221	< 0.00050
Aroclor 1232	< 0.00050
Aroclor 1242	< 0.00050
Aroclor 1248	< 0.00050
Aroclor 1254	< 0.00050
Aroclor 1260	< 0.00050
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4' DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00500
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0170
Arsenic, Dissolved	< 0.005
Barium, Total	0.1470
Barium, Dissolved	0.084
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0230
Chromium, Dissolved	< 0.0050
Lead, Total	0.0230
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0090
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0111
Acenaphthylene	< 0.0111
Anthracene	< 0.0111
Benzo(a)anthracene	< 0.0111
Benzo(a)pyrene	< 0.0111
Benzo(b)fluoranthene	< 0.0111
Benzo(g,h,i)perylene	< 0.0111
Benzo(k)fluoranthene	< 0.0111
4-Bromophenyl-phenylether	< 0.0111
Butylbenzylphthalate	< 0.0111
Carbazole	< 0.0111
4-Chloro-3-methylphenol	< 0.0111
4-Chloroaniline	< 0.0111
Bis(2-chloroethoxy)methane	< 0.0111
Bis(2-chloroethyl)ether	< 0.0111
Bis(2-chloroisopropyl)ether	< 0.0111
2-Chloronaphthalene	< 0.0111
2-Chlorophenol	< 0.0111
4-Chlorophenyl-phenylether	< 0.0111
Chrysene	< 0.0111
Dibenzofuran	< 0.0111
Dibenz(a,h)anthracene	< 0.0111
1,2-Dichlorobenzene	< 0.0111
1,3-Dichlorobenzene	< 0.0111
1,4-Dichlorobenzene	< 0.0111
3,3'-Dichlorobenzidine	< 0.0278
2,4-Dichlorophenol	< 0.0111
Diethylphthalate	< 0.0111

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
2,4-Dimethylphenol	< 0.0111
Dimethylphthalate	< 0.0111
Di-n-Butylphthalate	< 0.0111
4,6-Dinitro-2-methylphenol	< 0.0278
2,4-Dinitrophenol	< 0.0278
2,4-dinitrotoluene	< 0.0111
2,6-Dinitrotoluene	< 0.0111
Di-n-octylphthalate	< 0.0111
Fluoranthene	< 0.0111
Fluorene	< 0.0111
Hexachlorobenzene	< 0.0111
Hexachlorobutadiene	< 0.0111
Hexachlorocyclopentadiene	< 0.0111
Hexachloroethane	< 0.0111
Indeno(1,2,3-cd)pyrene	< 0.0111
Isophorone	< 0.0111
2-Methylnaphthalene	< 0.0111
2-Methylphenol	< 0.0111
3 and 4-Methylphenol	< 0.0111
Naphthalene	< 0.0111
2-Nitroaniline	< 0.0278
3-Nitroaniline	< 0.0278
4-Nitroaniline	< 0.0278
Nitrobenzene	< 0.0111
2-Nitrophenol	< 0.0111
4-Nitrophenol	< 0.0278
N-Nitroso-Di-n-Propylamine	< 0.0111
N-Nitrosodiphenylamine	< 0.0111
Pentachlorophenol	< 0.0278

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Phenanthrene	< 0.0111
Phenol	< 0.0111
Pyrene	< 0.0111
Bis(2-ethylhexyl)phthalate	< 0.0111
1,2,4-Trichlorobenzene	< 0.0111
2,4,5-Trichlorophenol	< 0.0278
2,4,6-Trichlorophenol	< 0.0111
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0061
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	0.0187
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	0.0024
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00505
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
 METALS	
Arsenic, Total	< 0.0050
Arsenic, Dissolved	< 0.005
Barium, Total	< 0.0100
Barium, Dissolved	< 0.010
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	< 0.0050
Chromium, Dissolved	< 0.0050
Lead, Total	< 0.0030
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
 MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

EXHIBIT NO. 3-I

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020

EXHIBIT NO. 3-I

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020

EXHIBIT NO. 3-1

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020

RTN 3-18126, HEA IRA Report, 1999

**TABLE 1
ANALYTICAL SUMMARY TABLE - SOIL SAMPLES
LAWRENCE, MASSACHUSETTS**

PCB Analysis	03014-SB5 NORTH	03014-SB5 SOUTH	03014-SB5 EAST	03014-SB5 WEST	03014-F2	03014-SS8	03014-SS8 NORTH	03014-SS8 SOUTH	03014-SS8 EAST	03014-SS8 WEST
AROCLOR 1016/1242	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
AROCLOR 1254	2,100	BDL	2,000	2,300	6,100	950	3,000	3,400	2,700	2,300
AROCLOR 1260	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
VOC Analysis										
Trichlorofluoromethane	1,000	200	690	720	2,600	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	BDL	BDL	BDL	BDL	BDL	NA	NA	NA	NA	NA
Tetrachloroethane	220	BDL	BDL	79	BDL	NA	NA	NA	NA	NA

PCB Analysis	03014-SS7	03014-SS7 NORTH	03014-SS7 SOUTH	03014-SS7 EAST	03014-SS7 WEST	03014-F7	03014-SB2 SS1	03014-SB6 SS1	03014-ALL BDL
AROCLOR 1016/1242	BDL	BDL	BDL	BDL	BDL	BDL	2,000	BDL	BDL
AROCLOR 1254	BDL	BDL	BDL	BDL	BDL	3,000	BDL	BDL	BDL
AROCLOR 1260	3,200	2,600	3,200	3,500	2,900	BDL	BDL	57,000	BDL
VOC Analysis									
Trichlorofluoromethane	NA	NA	NA	BDL	NA	2,700	NA	470	110
1,1,1-Trichloroethane	NA	NA	NA	BDL	NA	BDL	NA	250	BDL
Tetrachloroethane	NA	NA	NA	79	NA	BDL	NA	BDL	BDL

PCB Analysis	03014-SB6 SS2	03014-SB6 N1	03014-SB6 E1	03014-SB6 S1
AROCLOR 1016/1242	BDL	BDL	BDL	BDL
AROCLOR 1254	BDL	BDL	BDL	BDL
AROCLOR 1260	BDL	92,000	3,800	BDL

- Notes: 1. All values expressed in micrograms per kilogram (ug/kg) or parts per billion (ppb).
 2. BDL indicates that the analyte was not detected above laboratory detection limits.
 3. NA = Not Analyzed.
 4. Samples were collected on April 28, 1999 and June 4, 1999 (SB6-SS2 through SB6-S1).
 5. PCB analysis performed by EPA Method 8082.
 6. VOC Analysis performed by EPA Method 8021B via EPA Method 8260B.
 7. VOC = Volatile Organic Compounds

**TABLE 2 - LABORATORY RESULTS - GROUND WATER
TOMBARELLO'S YARD, LAWRENCE, MA**

Sample Location					MCP Method 1 Standards		
	03014-MW1-GW2	03014-MW5-GW1	03014-MW6-GW1	03014-MW7-GW1	GW1	GW2	GW3
Compounds							
EXTRACTABLE PETROLEUM HYDROCARBONS							
C9-C18 Aliphatics	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
C19-C36 Aliphatics	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
C11-C22 Aromatics	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Naphthalene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
2-Methylnaphthalene	ND(0.01)	ND(0.01)	NT	NT	NA	NA	NA
Phenanthrene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Acenaphthene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Acenaphthalene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Anthracene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Benzo(a)Anthracene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Benzo(a)Pyrene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Benzo(b)Fluoranthene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Benzo(g,h,i)Perylene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Benzo(k)Fluoranthene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Chrysene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Dibenzo(a,h)Anthracene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Fluoranthene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Fluorene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	ND(0.0002)	ND(0.0002)	NT	NT	NA	NA	NA
Pyrene	ND(0.02)	ND(0.02)	NT	NT	NA	NA	NA
METALS - ARSENIC, CHROMIUM AND LEAD							
Arsenic	ND(0.01)	ND(0.01)	0.01	0.02	0.05	NA	0.4
Chromium	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	0.10	NA	2
Lead	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	0.015	NA	0.03
VOLATILE PETROLEUM HYDROCARBONS							
All Parameters	ND	ND	NT	NT	NA	NA	NA
VOLATILE ORGANIC COMPOUNDS							
Tetrachloroethene	ND(0.001)	ND(0.001)	0.002	ND(0.001)	0.005	3	5
MTBE	ND(0.001)	ND(0.001)	0.005	ND(0.001)	0.07	50	50
Trichloroethene	ND(0.001)	ND(0.001)	0.01	ND(0.001)	0.005	0.3	20
Chloroethane	ND(0.001)	ND(0.001)	ND(0.001)	0.01	RCGW1	1	

Notes:

1. Samples collected on June 10, 1999.
2. Results reported in milligrams per kilogram or milligrams per liter (parts per million).
3. Extractable and volatile petroleum hydrocarbons by MA DEP-specified methods. Metals by U.S. EPA 6010/7470, VOCs by U.S. EPA Method 8260
4. Method 1 ground water standards.
GW-2 and GW-3 standards. Results in bold exceed one or more standards.
5. ND(#) = Not detected at laboratory detection limit noted. NT = Not Tested.

Table 3
Haley and Aldrich Analytical Soil Results
 Former Tombarello and Sons Property
 Lawrence, Massachusetts

Sample ID	B4	D5	E4	F2	F4	G3	BLR-TP2	G4	H2	H3	BLR-TP1	BLR-TP1	BRM-TP1	H6	I3	I4	J1	J5
Grid ID	B4	D5	E4	F2	F4	G3	G3	G4	H2	H3	H3	H3	H6	H6	I3	I4	J1	J5
Depth	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	1.5-2'	3-4.5'	4-6'	0-1'	0-1'	0-1'	0-1'	0-1'
Aroclor 1016										6.5	3.2	2.1		8.7		0.81		
Aroclor 1242						64												
Aroclor 1254																		
Aroclor 1260	0.85	52	15	26	11		2	21	11	37	2.8	3.6	13	8.2	43	2.2	2.6	0.74

Sample ID	BRM-TP3	SCC-1	BRM-TP4	BRM-TP4	L5	BRM-TP5	M2	BRM-TP10	SM2-3	BRM-TP9/9A	M3	BRM-TP8	BRM-TP8	M4	BRM-TP7	BRM-TP7	BRM-TP6
Grid ID	J6	K6	K6	K6	L5	L6	M2	M2	M2	M3	M3	M4	M4	M4	M5	M5	M6
Depth	9-11'	0-1'	3.5-5'	6-7'	0-1'	9-11'	0-1'	0-1'	0-1'	4-6'	0-1'	4-5'	5-6'	0-1'	3-6'	12-15'	11-13'
Aroclor 1016	2.6			9.3		11										0.37	4.5
Aroclor 1242														66			
Aroclor 1254							0.86			9.2	11	0.68					
Aroclor 1260	9.3	3.2	78	62	3.8	60	1.4	1.1	2.8	42	2.4	0.47		9.9	0.57	11	

TABLE 8
 SEDIMENT SAMPLE RESULTS
 FORMER TOMBARELLO AND SONS PROPERTY
 LAWRENCE, MASS

Analytes	NOAA TEL ¹	Haley & Aldrich September-2002									WESTON 12-February-2003		
		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	CB1	RSED1	OUTFALL1
C9-C18 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	403 U	192 U	35.2 U
C19-C36 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,850	321	204
C11-C22 Aromatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,140	305	107
Aroclor 1016	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1221	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1232	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1242	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0668	3.48
Aroclor 1248	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1254	0.03	ND	ND	ND	ND	ND	ND	0.16	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1260	0.03	ND	ND	ND	2.1	ND	ND	0.33	ND	ND	1.64	0.0511 U	0.47 U
Arsenic	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.9	7.82	4.7 U
Barium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	598	51.4	73.3
Cadmium	0.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.96	1.09	2.28
Chromium	36.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	72.7	77.8	77.2
Lead	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,480	120	94.6
Mercury	0.174	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.04 *	0.605 **	0.235
Selenium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.6 U	9.99 U	9.39 U
Silver	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.22	0.999 U	1.43
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	26,000	4100

Notes:

* = Result and reporting limit based on 10x dilution

** = Result and reporting limit based on 5x dilution

U = Not detected at associated reporting limit

NS = Not Sampled

NL = Not Listed

NA = Not Applicable

¹ = Lowest ARCs H. azteca TEL or Threshold Effects Level (TEL), whichever is lowest (freshwater sediment).

Highlighted values exceed NOAA TEL

TABLE 8
 SEDIMENT SAMPLE RESULTS
 FORMER TOMBARELLO AND SONS PROPERTY
 LAWRENCE, MASS

Analytes	NOAA-TELs	Haley & Aldrich September-2002									WESTON 12-February-2003		
		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	CB1	RSED1	OUTFALL1
C9-C18 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	403 U	192 U	35.2 U
C19-C36 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,850	321	204
C11-C22 Aromatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,140	305	107
Aroclor 1016	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1221	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1232	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1242	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0668	3.48
Aroclor 1248	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1254	0.03	ND	ND	ND	ND	ND	ND	0.16	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1260	0.03	ND	ND	ND	2.1	ND	ND	0.33	ND	ND	1.64	0.0511 U	0.47 U
Arsenic	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.9	7.82	4.7 U
Barium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	598	51.4	73.3
Cadmium	0.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.96	1.09	2.28
Chromium	36.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	72.7	77.8	77.2
Lead	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,480	120	94.6
Mercury	0.174	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.04 *	0.605 **	0.235
Selenium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.6 U	9.99 U	9.39 U
Silver	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.22	0.999 U	1.43
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	26,000	4100

Notes:

* = Result and reporting limit based on 10x dilution

** = Result and reporting limit based on 5x dilution

U = Not detected at associated reporting limit

NS = Not Sampled

NL = Not Listed

NA = Not Applicable

¹ = Lowest ARCs H. azteca TEL or Threshold Effects Level (TEL), whichever is lowest (freshwater sediment).

Highlighted values exceed NOAA TEL

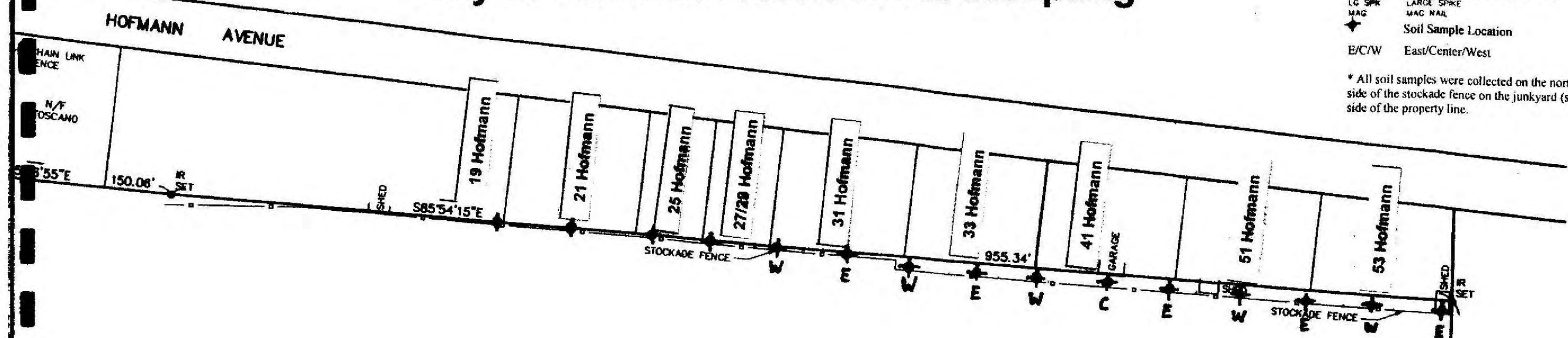
City of Lawrence Residential Sampling

LEGEND

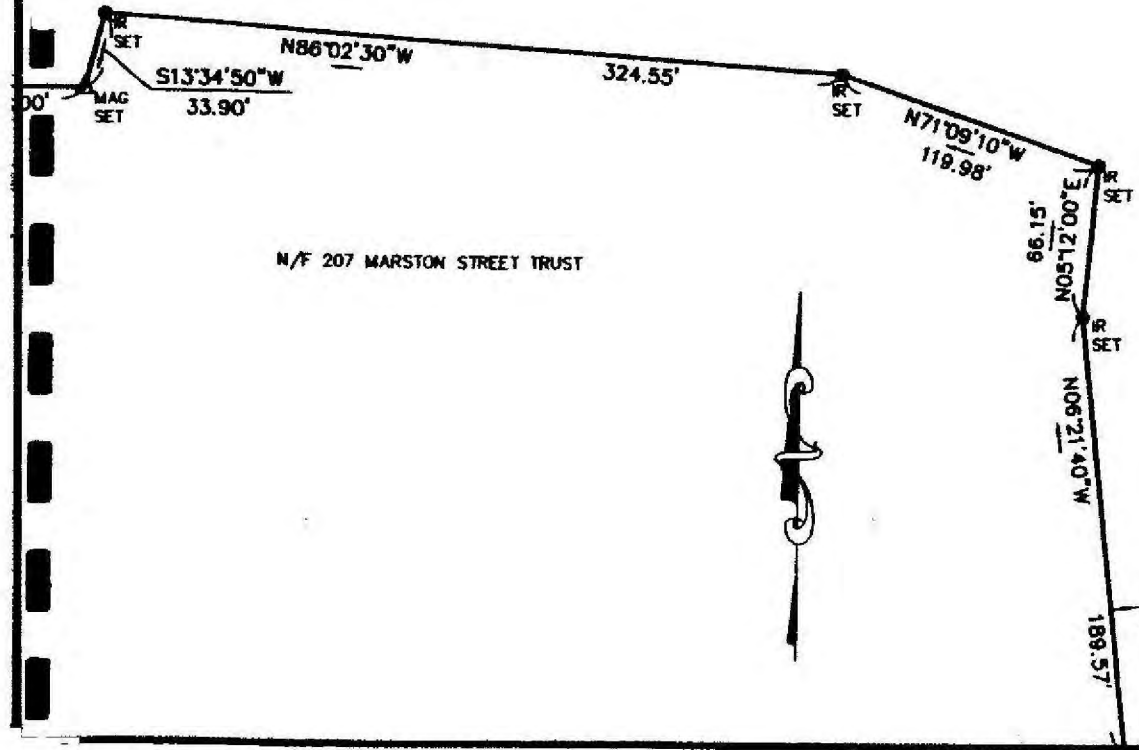
- IR IRON ROD
- FND FOUND
- N/F NOW OR FORMERLY
- M/H MASSACHUSETTS HIGHWAY BOUND
- LG SPK LARGE SPIKE
- MAG MAG NAIL
- ◆ Soil Sample Location
- E/C/W East/Center/West



* All soil samples were collected on the north side of the stockade fence on the junkyard (south side of the property line).



LOT B
 AREA=610,196 S.F.
 =14.01 AC.



502.79'
 N/F COMMONWEALTH OF MASSACHUSETTS
 INTERSTATE ROUTE 495
 500'49'05\"/>

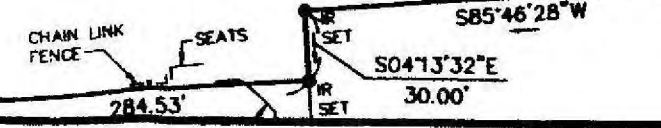


Figure 3-1
 IRA/IH Soil
 Sampling Location Map

Created From: **PLAN OF LAND**
 IN **LAWRENCE, MASSACHUSETTS**
 PREPARED FOR
JAMES GRIFONI
 240 CANNISTOCK ROAD
 NORTH ANDOVER, MASSACHUSETTS 01846
 DATE MARCH 3, 2005

SCALE Not to Scale

MERRIMACK ENGINEERING SERVICES
 60 PARK STREET
 ANDOVER, MASSACHUSETTS 01810



#19 Hofmann Avenue Soil Sampling Data (mg/kg) 10/5/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-129	.80	31	140	1.7	40	.25	170	.70	.51
SB-130	.49	11	110	1.4	27	2.7	170	.70	.31
SB-131	.64	11	90	1.4	28	.30	210	.75	.36
SB-132	1.3	9.9	68	1.1	24	.30	220	.75	.33
SB-133	.19	11	37	1.1	37	.26	88	.70	.17
Total	3.42	73.9	445	6.7	156	3.81	858	3.6	1.68
EPC	.68	14.8	89	1.34	31.2	.76	171.6	.72	.34
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#21 Hofmann Avenue Soil Sampling Data (mg/kg) 10/5/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-134	1.2	9.3	50	.85	21	.27	91	.75	.30
SB-135	1.5	12	77	1.3	27	1.8	230	.75	.37
SB-136	1.6	11	50	.95	21	.27	130	.70	.35
SB-137	1.9	12	62	1.0	23	.26	150	.70	.36
SB-138	.92	19	44	.98	22	.25	91	.70	.26
SB-139	.38	10	50	.96	25	.27	83	.70	.20
SB-140	.95	16	52	.88	34	.29	79	.75	.14
SB-141	1.4	12	50	.98	25	.29	100	.70	.24
SB-142	3.8	13	71	1.5	23	.27	320	.70	.90
SB-143	2.4	9.2	75	2.3	27	.27	180	.70	.44
SB-144	4.1	11	76	2.2	26	.27	220	.70	.43
Total	20.15	134.5	657	13.9	274	4.51	1524	7.85	3.99
EPC	1.83	12.2	59.7	1.26	24.91	.41	138.5	.71	.36
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#25 Hofmann Avenue Soil Sampling Data (mg/kg) 10/4/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-124	.97	12	56	.72	22	.25	120	.70	.22
SB-125	.92	12	120	1.8	30	.25	380	.60	.38
SB-126	1.5	14	240	3.5	24	.27	600	.70	.43
SB-127	.96	13	97	1.5	27	.29	160	.75	.46
SB-128	.71	12	100	1.6	27	.27	240	.70	.43
Total	5.06	63	613	9.12	130	1.33	1500	3.45	2.06
EPC	1.01	12.6	122.6	1.8	26	.27	300	.69	.41
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#27/29 Hofmann Avenue Soil Sampling Data (mg/kg) 10/4/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-114	.29	12	64	1.2	24	.25	130	.60	.22
SB-115	.25	10	44	.96	28	.25	71	.70	.21
SB-116	.71	20	79	1.1	24	.25	150	.70	.40
SB-117	.11	6.7	32	.58	19	.25	35	.70	.079
SB-118	.19	10	43	.70	23	.27	77	.70	.16
SB-119	.22	8.5	42	.61	20	.25	83	.70	.23
SB-120	.39	15	45	.65	20	.27	78	.70	.25
SB-121	.34	15	52	.80	29	.25	81	.70	.14
SB-122	.43	21	42	.93	34	.27	70	.70	.22
SB-123	.64	17	51	.78	24	.25	110	.70	.27
Total	3.57	125.2	494	8.31	245	2.56	885	6.9	2.18
EPC	.36	12.5	49.4	.83	24.5	.26	88.5	.69	.22
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#31 Hofmann Avenue Soil Sampling Data 10/4/07

SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-104	.57	7.7	53	.77	26	.27	100	.70	.20
SB-105	1.7	15	81	1.5	28	.26	210	.70	.40
SB-106	.71	8.6	66	.98	24	.26	170	.70	.32
SB-107	2.0	12	79	1.4	31	.26	220	.70	.34
SB-108	.80	9.9	60	1.0	26	.25	180	.60	.32
SB-109	.37	9.7	82	.80	24	.27	170	.70	.18
SB-110	3.0	11	81	1.7	31	.25	220	.60	.40
SB-111	.19	8.0	49	.58	24	.25	73	.70	.10
SB-112	.27	7.6	43	.78	25	.27	72	.70	.15
SB-113	1.2	9.7	62	1.1	26	.26	170	.70	.54
Total	9.81	99.2	656	10.61	265	2.6	1755	6.8	2.95
EPC	.98	9.92	65.6	1.06	26.5	.26	175.5	.68	.30
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#33 Hofmann Avenue Soil Sampling Data (mg/kg) 10/4/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-84	.69	9.0	160	1.7	20	.26	290	.76	.33
SB-85	.57	11	95	0.93	24	.35	230	.75	.30
SB-86	.33	9.4	82	.82	23	.28	180	1.4	.19
SB-87	.60	9.9	91	.97	27	.28	260	.70	.25
SB-88	.54	10	120	1.1	28	.33	280	.53	.75
SB-89	.063	6.9	45	.31	32	.28	53	.72	.071
SB-90	.46	11	83	.85	23	.27	230	.72	.41
SB-91	.009	7.4	45	.29	26	.27	42	.72	.056
SB-92	1.0	9.5	83	.98	22	.27	230	.72	.27
SB-93	.025	7.1	43	.27	24	.24	35	.51	.049
SB-94	.009	6.9	45	.28	25	.26	50	.72	.075
SB-95	.16	10	64	.26	24	.24	100	.72	.11
SB-96	.77	9.9	100	1.1	23	.24	260	.75	.26
SB-97	.009	7.3	43	.26	27	.26	31	.70	.068
SB-98	.092	8.7	66	.72	23	.27	200	.72	.17
SB-99	.012	6.9	48	.34	26	.27	33	.70	.077
SB-100	.087	6.6	53	.37	20	.25	68	.70	.093
SB-101	.019	6.8	48	.40	25	.23	55	.60	.074
SB-102	.14	9.7	67	.65	30	.27	120	.70	.18
SB-103	.009	6.9	44	.31	27	.25	50	.70	.077
Total	5.6	161	1425	12.91	499	5.37	3329	14.54	3.86
EPC	.28	8.05	71.25	0.65	24.95	.27	166	.73	.19
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

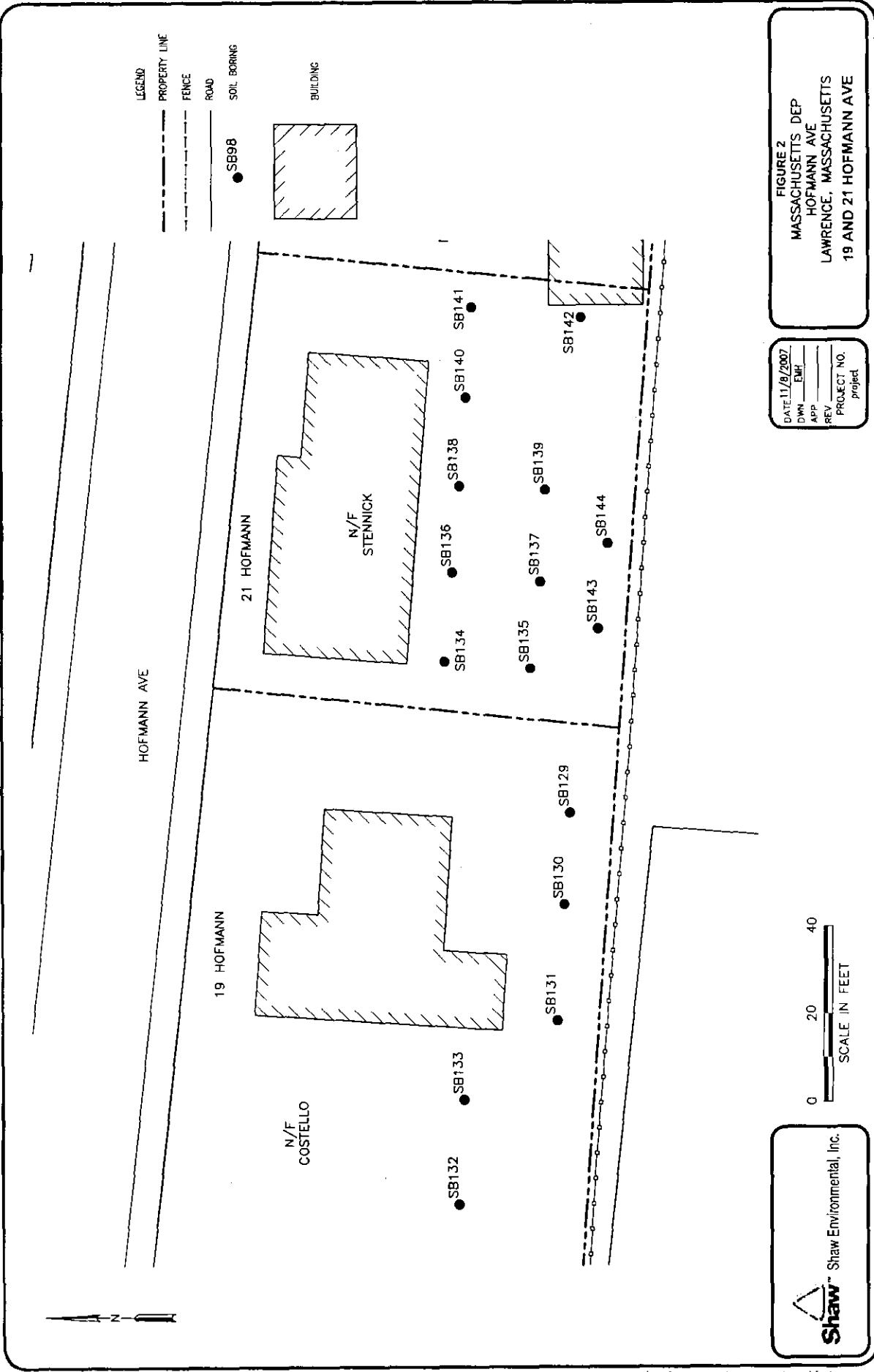
#41 Hofmann Avenue Soil Sampling Data (mg/kg) 10/3/07									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-71	1.5	8.9	100	1.5	22	0.19	470	0.15	1.3
SB-72	3.4	14	120	1.8	26	0.16	530	1.8	0.63
SB-73	4.4	12	250	6.0	31	0.29	510	1.2	0.71
SB-74	1.5	20	1400	30	71	0.53	1300	0.7	1.0
SB-75	1.2	9.0	110	1.6	24	0.6	510	0.68	0.52
SB-76	4.2	57	200	3.4	27	0.36	1000	1.1	0.89
SB-77	4.6	12	140	2.5	33	0.26	510	0.68	0.58
SB-78	1.3	17	330	6.1	27	0.11	300	0.84	0.44
SB-79	.78	10	130	1.7	19	0.21	1000	0.48	0.46
SB-80	2.6	17	200	3.7	28	0.29	560	0.7	0.52
SB-81	.40	11	100	1.2	24	0.29	400	0.7	0.46
SB-82	.32	11	52	0.48	20	0.24	110	0.6	0.16
SB-83	.58	17	290	2.5	27	0.24	220	0.6	1.6
Total	26.8	216	3422	62.5	379	3.77	7420	10.23	9.27
EPC	2.1	16.6	263	4.8	29.2	0.3	571	0.79	0.7
S-1	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

#51 Hofmann Avenue Soil Sampling Data (mg/kg) 10/2/07 (0-6")									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-32	2.0	14	68	1.6	21	0.15	140	0.40	0.35
SB-33	3.4	11	56	1.7	21	0.05	130	0.41	0.36
SB-34	1.2	11	270	15	28	0.31	340	1.6	0.52
SB-36	1.6	12	54	0.99	19	0.05	110	0.38	0.36
SB-38	1.9	17	280	13	27	0.14	290	1.1	0.72
SB-39	1.1	9.7	51	0.89	26	0.11	91	0.13	0.66
SB-40	1.6	10	49	0.92	17	0.05	92	0.34	0.26
SB-41	22.0	14	180	3.6	47	0.24	300	0.30	0.71
SB-41 (6-12")	5.1	8.6	65	1.3	18	.55	76	.44	.31
SB-42	1.0	9.5	57	0.95	23	0.21	100	0.7	0.05
SB-43	1.9	13	65	1.3	24	0.24	130	0.75	0.31
SB-44	3.3	14	77	1.6	26	0.26	170	0.7	0.33
SB-45	10.0	23	180	3.4	42	0.29	370	0.75	0.61
SB-45 (6-12")	1.6	13	58	.94	18	.06	83	.47	.22
SB-49	1.5	12	64	1.2	24	0.29	140	0.75	0.26
SB-50	2.0	11	65	1.5	24	0.26	140	0.7	0.32
SB-54	1.5	11	57	1.1	24	0.26	120	0.7	0.24
SB-55	2.0	14	65	1.3	23	0.27	160	0.7	0.33
SB-56	2.0	14	110	1.4	32	0.25	330	0.7	0.39
SB-57	1.2	14	56	1.1	22	0.27	180	0.7	0.33
SB-58	1.8	13	67	1.3	24	0.29	170	0.75	0.33
SB-59	5.7	15	160	2.9	25	0.26	410	0.7	0.53
Total	75.4	284	2154	46.0	555	4.9	4072	14.64	13.23
EPC	3.3	12.3	93.7	2.00	24.1	0.21	177	0.64	0.58
S-1	2.0	20	1000	2.0	30	100	300	400	20
GARDEN	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-63	0.87	11	130	1.3	29	0.29	370	0.75	0.61
SB-63 (6-12")	NA	9.4	89	0.78	20	0.11	220	0.40	0.77
SB-64	0.83	11	150	1.4	30	0.25	370	0.7	0.53
SB-64 (6-12")	NA	9.6	120	0.96	22	0.13	300	0.58	0.77
SB-65	0.75	13	190	2.6	32	0.26	470	0.7	0.78
SB-65 (6-12")	NA	11	180	2.7	23	0.32	500	0.84	0.68
SB-66	1.2	12	130	1.3	29	0.29	340	0.7	0.78
SB-66 (6-12")	NA	13	82	1.1	21	0.05	200	0.39	0.59
SB-67	0.79	13	170	1.6	31	0.29	400	0.75	0.84
SB-67	NA	12	140	1.3	22	0.19	310	0.43	0.83

(6-12")									
GARDEN	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-68	0.84	12	390	1.5	35	0.30	410	0.75	0.67
SB-68 (6-12")	NA	9.3	120	1.2	25	0.15	350	0.41	0.74
SB-69	1.4	10	140	2.0	26	0.22	360	0.57	0.87
SB-69 (6-12")	NA	11	280	4.0	26	0.37	550	0.61	0.56
SB-70	0.78	8.0	100	1.0	20	0.11	610	0.46	0.61
SB-70 (6-12")	NA	9.5	110	1.4	24	0.21	350	0.37	0.72
Total	7.46	164	2521	26.14	415	3.54	6110	9.41	11.35
EPC	0.9	10.3	157.6	1.63	25.94	0.22	382	0.59	0.71
S-1 Std.	2.0	20	1000	2.0	30	100	300	400	20
EPC Tot.	2.15	11.3	125.7	1.82	25.02	0.21	279.5	0.62	0.65
Bkgd.(Nat.)	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1

NA = Not Analyzed

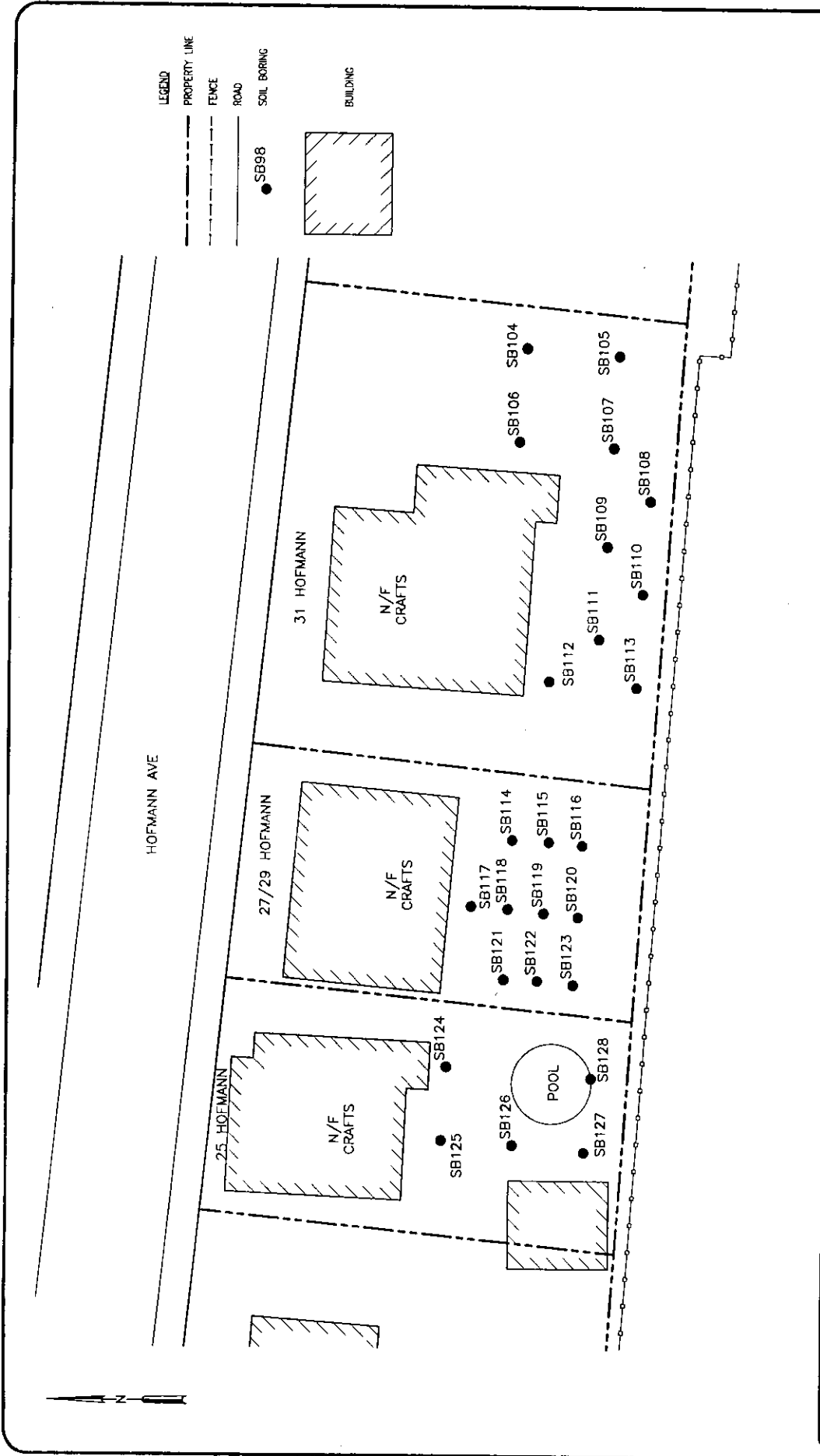
#53 Hofmann Avenue Soil Sampling Data (mg/kg) 10/2/07 (0-6")									
SAMPLE	PCB	As	Ba	Cd	Cr	Ag	Pb	Se	Hg
SB-05	1.3	7.9	43	0.93	16	0.05	89	0.13	0.21
SB-06	1.3	7.2	42	0.87	16	0.05	77	0.53	0.24
SB-07	0.5	8.3	49	0.73	15	0.05	74	0.12	0.22
SB-08	0.4	7.7	40	0.59	14	0.05	54	0.40	0.21
SB-13	0.4	8.7	47	0.70	16	0.05	69	0.29	0.23
SB-14	0.6	8.2	51	0.81	17	0.05	76	0.38	0.26
SB-15	1.2	7.1	76	1.7	19	0.05	120	0.26	0.25
SB-19	0.6	11	46	0.68	18	0.05	70	0.12	0.22
SB-20	1.6	8.2	58	1.2	19	0.05	120	0.13	0.26
SB-21	3.1	9.4	2200	2.4	130	2.0	760	0.41	0.34
SB-21 (6-12")		9.7	340	2.3	100	1.3	250	.52	.27
SB-25	0.3	8.0	37	0.58	28	0.14	52	0.32	0.22
SB-26	0.4	9.8	50	0.94	17	0.12	75	0.36	0.25
SB-27	1.7	7.7	50	1.0	17	0.05	110	0.13	0.27
SB-32	2.0	14	68	1.6	21	0.15	140	0.40	0.35
SB-33	3.4	11	56	1.7	21	0.05	130	0.41	0.36
SB-34	1.2	11	270	15	28	0.31	340	1.6	0.52
SB-36	1.6	12	54	0.99	19	0.05	110	0.38	0.36
SB-38	1.9	17	280	13	27	0.14	290	1.1	0.72
Total	23.5	174.2	3517	45.4	558	4.76	3006	7.99	5.76
EPC	1.3	9.7	203	2.5	29.4	0.19	158	0.42	0.30
S-1 Std.	2.0	20	1000	2.0	30	100	300	400	20
Bkgd.	NA	20	50	2	30	0.6	100	0.5	0.3
Bkgd. (Coal/Wood Ash)	NA	20	50	3	40	5	600	1	1



DATE: 11/9/2007
 DWN: EMH
 APP: _____
 REV: _____
 PROJECT NO. _____
 project

FIGURE 2
 MASSACHUSETTS DEP
 HOFMANN AVE
 LAWRENCE, MASSACHUSETTS
 19 AND 21 HOFMANN AVE

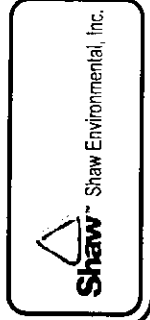
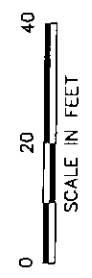
Shaw Shaw Environmental, Inc.



LEGEND
 - - - - - PROPERTY LINE
 - - - - - FENCE
 - - - - - ROAD
 ● SB98 SOIL BORING
 ▨ BUILDING

FIGURE 3
 MASSACHUSETTS DEP
 HOFMANN AVE
 LAWRENCE, MASSACHUSETTS
 25, 27, 29 AND 31 HOFMANN AVE

DATE: 11/8/2007	DWN: EMI
APP: _____	REV: _____
PROJECT NO.:	project:



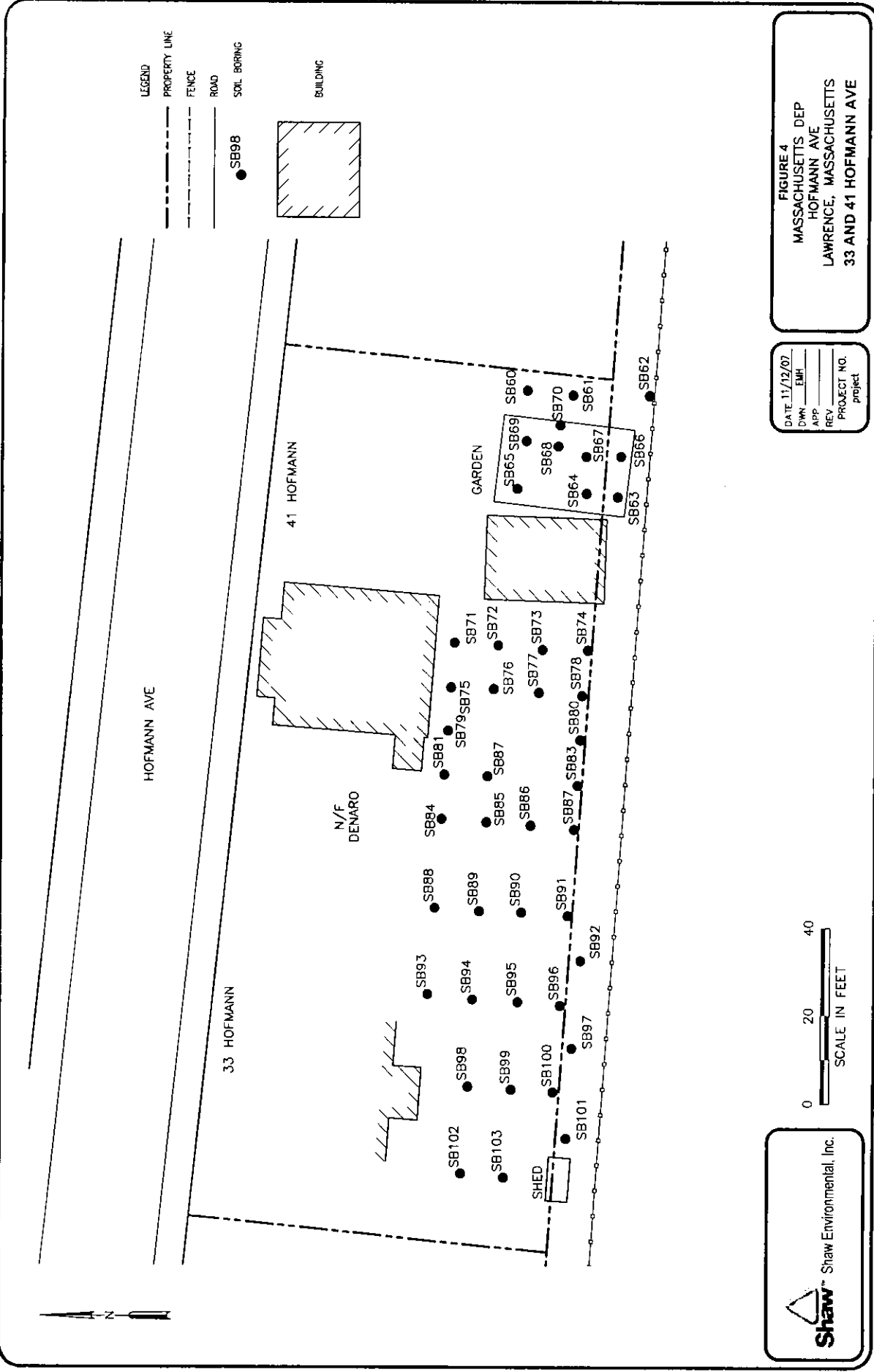
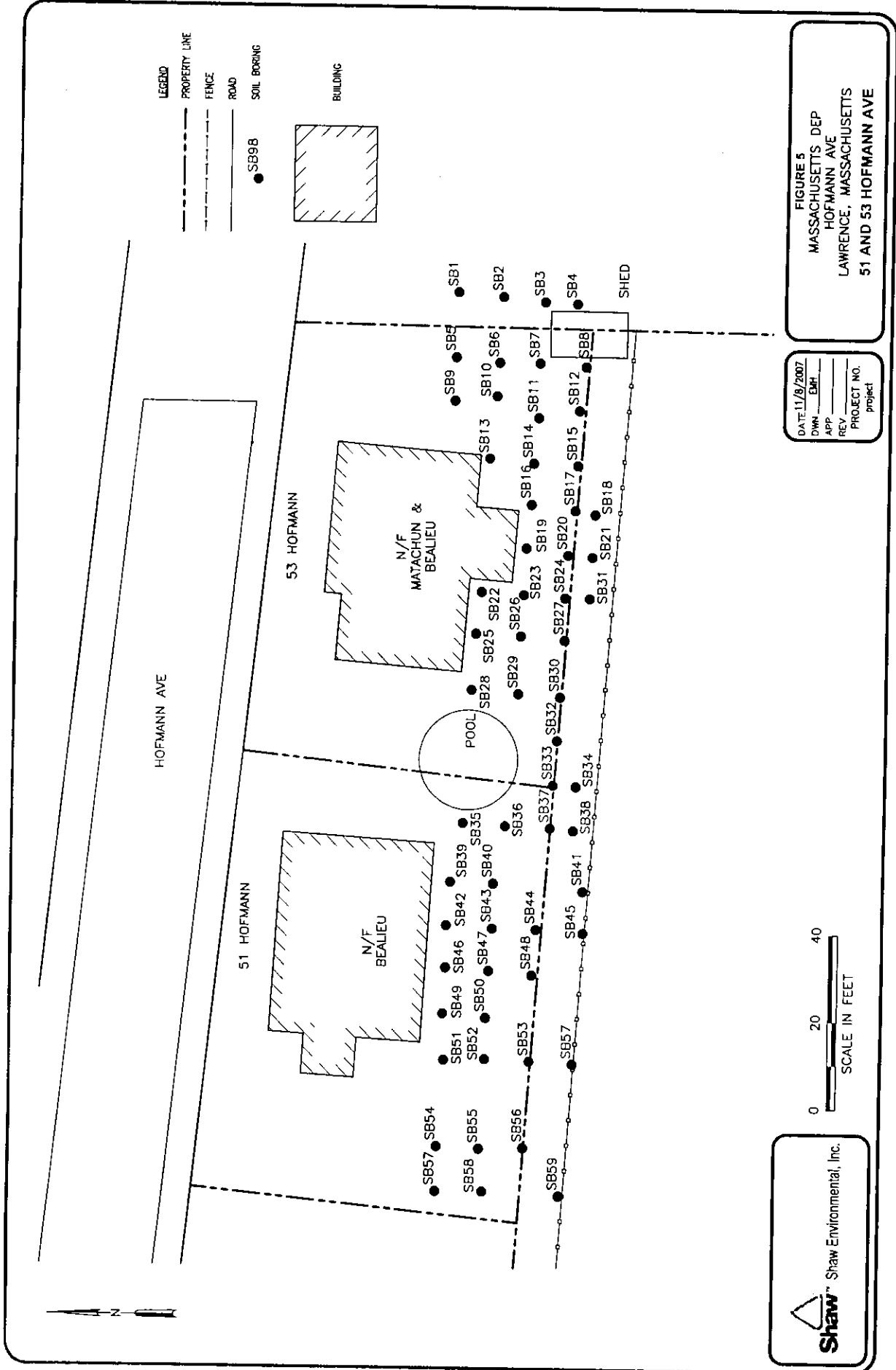


FIGURE 4
 MASSACHUSETTS DEP
 HOFMANN AVE
 LAWRENCE, MASSACHUSETTS
 33 AND 41 HOFMANN AVE

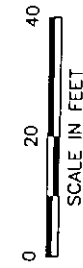
DATE 11/12/07	DWN	EMH
	APP	
	REV	
	PROJECT NO.	project



Shaw Shaw Environmental, Inc.



DATE	11/19/2007
DWN	EMH
APP	
REV	
PROJECT NO.	project



Shaw Shaw Environmental, Inc.

FIGURE 5
MASSACHUSETTS DEP
HOFMANN AVE
LAWRENCE, MASSACHUSETTS
51 AND 53 HOFMANN AVE

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**REMOVAL PROGRAM
AFTER ACTION REPORT
FOR THE
TOMBARELLO SITE
LAWRENCE, ESSEX COUNTY, MASSACHUSETTS
9 MAY 2011 THROUGH 28 JUNE 2011

RESIDENTIAL PROPERTY – 33 HOFFMAN AVENUE**

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
5 Post Office Square, Suite 100
Boston, Massachusetts 02109

CONTRACT NO. EP-W-05-042

TDD NO. 10-07-0008

TASK NO. 0653

DC NO. R-6933

Submitted by:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team III (START)
3 Riverside Drive
Andover, MA 01810

December 2011

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Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Appendix C

Photodocumentation Log

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1.0 INTRODUCTION

The Weston Solutions, Inc., Superfund Technical Assessment and Response Team III (START) was tasked under Technical Direction Document (TDD) Number (No.) 01-10-07-0008 to provide technical support to U.S. Environmental Protection Agency (EPA) Region I On-Scene Coordinator (OSC) Eric Vanderboom with removal activities at the Tombarello site, located in the Town of Lawrence, Essex County, Massachusetts (see Appendix A, Figures, Figure 1 - Site Location Map). Specifically, START conducted post-excavation soil sampling activities at several residential properties located along the periphery of the Tombarello Site, to determine whether cleanup levels had been met at the residential properties. Guardian Environmental Services, Inc. (GES), an Emergency Rapid Response Services (ERRS) contractor, was tasked to conduct soil excavation activities.

Removal activities included accessing residential properties; collecting and analyzing surface soil samples to determine the extent of contamination; removing fencing and vegetation from access ways and work areas; excavating, stockpiling, and disposing of contaminated soils; collecting post-excavation soil samples from the floor and walls of excavations; conducting additional excavation as necessary, based on analysis of post-excavation samples; conducting perimeter air monitoring; and conducting restoration activities that included backfilling excavations with clean soil, spreading grass seed, and replacing vegetation removed or damaged during the removal.

2.0 SITE DESCRIPTION

The 33 Hoffman Avenue property (the property) is an approximately 0.20-acre parcel. The property is bordered by Hoffman Avenue to the north, residential properties to the west and east, and the Tombarello Site (207 Marston Street) to the south. The property features include the residence, a paved driveway and walkways, and a garage (see Figure 2 - Soil Boring Location Map).

3.0 NARRATIVE CHRONOLOGY

On 2 September 2010 and 6 April 2011, EPA and WESTON START personnel accessed the property to collect surface and subsurface soil samples as part of the Tombarello Site Preliminary Assessment/Site Investigation (PA/SI). Sampling design and soil sampling activities were conducted in accordance with the EPA-approved site-specific Sampling and Analysis Plan (SAP), prepared as a separate document, entitled *Sampling and Analysis Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Site activities were also conducted in accordance with health and safety requirements outlined in the site-specific Health and Safety Plan (HASP), entitled *Health and Safety Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Sampling results from the PA/SI are presented in Appendix B, Tables, Tables 1 and 2.

On 24 May 2011 through 2 June 2011, START personnel accessed the property to collect post-excavation soil samples. The samples were field-screened to determine whether lead was present in the soil at levels above the direct exposure criteria of 300 parts per million (ppm) [equivalent to milligrams per Kilogram (mg/Kg)], as established in the *Massachusetts Department of*

Environmental Protection Massachusetts Contingency Plan (MCP) S-1 Standards; and whether site-specific cleanup goals had been attained. All post-excavation sampling activities were conducted in accordance with the site-specific SAP, and with the site-specific HASP.

Shaw Environmental & Infrastructure, Inc., Emergency Rapid Response Services (ERRS) personnel cleared vegetation from the property, and excavated soil at five grids determined to contain lead at concentrations above MCP S-1 Standards (see Figure 3 - Removal Grid Location Map). An ash layer was also encountered in all of the grids. To completely remove the ash layer, grids were excavated to depths of 1.5 to 3.5 feet below ground surface (bgs), until native material was encountered. Soil excavation and removal activities were performed by ERRS personnel from 10 May 2011 to 6 June 2011. Air monitoring for particulates was conducted during excavation activities, and no readings above action levels were recorded.

Approximately 20 post-excavation soil samples were collected and field-screened for lead during the investigation, using an X-Ray Fluorescence (XRF) instrument. Field soil screening results ranged from 36.7 mg/Kg to 1,294 mg/Kg. In addition, approximately 10 percent of the soil samples collected for field screening were submitted for confirmation analysis for metals (including lead) and polychlorinated biphenyls (PCBs) at the EPA Office of Environmental Measurement and Evaluation (OEME) New England Regional Laboratory (NERL) in North Chelmsford, MA. Field screening results are included in Table 3, and laboratory results are included in Table 4.

Upon completion of excavation activities, ERRS personnel performed site restoration activities, which included backfilling excavated areas, grading topsoil, and spreading grass seed, as needed.

A photodocumentation log of investigation and removal activities is included as Appendix C, Photodocumentation Log.

Appendix A

Figures

Figure 1 - Site Location Map

Figure 2 - Soil Boring Location Map

Figure 3 - Removal Grid Location Map

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Figure 1

Site Location Map

**Tombarello Site
207 Marston Street
Lawrence, MA 01840**

**EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042**

TDD Number: 10-07-0007
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: Robert Sharp
Modified on: 6 October 2010

Data Sources:

Topos: MicroPath/USGS
Quadrangle Name: South Groveland
All other data: START



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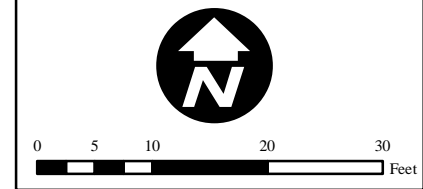


Figure 2
Soil Boring Location Map
33 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042
TDD Number: 10-07-0008
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: R. Sharp
Modified on: 25 October 2010

LEGEND

- P-33 Soil Borings
- Property Boundaries



Data Sources:
 Imagery: Mass GIS
 All other data: START



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Figure 3
Removal Grid Location Map
33 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts


EPA Region I
 Superfund Technical Assessment and
 Response Team (START) III
 Contract No. EP-W-05-042

TDD Number: 10-07-0008
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2011

LEGEND

 Removal Grids
 P-33 Soil Borings

() = Number indicates depth to which grid was excavated


 0 5 10 20 30
 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START

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Appendix B

Tables

Table 1 - Summary Table, Polycyclic Aromatic Hydrocarbons (PAHs) in
Soil Analysis

Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in
Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in
Soil Analyses

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0264	R01-100830MB-0265	R01-100830MB-0266	R01-100830MB-0267	R01-100830MB-0268	R01-100830MB-0269	R01-100830MB-0270
	SAMPLE LOCATION			P-33 SB-300A	P-33 SB-300B	P-33 SB-300C	P-33 SB-301A	P-33 SB-301B	P-33 SB-301C	P-33 SB-302A
	LABORATORY NUMBER			AB09460	AB09461	AB09462	AB09463	AB09464	AB09465	AB09466
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	140	270	ND	120	ND	ND	ND
Acenaphthylene	500	1,000	600,000	110	140	ND	ND	ND	ND	150
Anthracene	1,000	4,000	1,000,000	510	840	110	350	ND	ND	540
Benzo(a)anthracene	2,000	9,000	7,000	1,900	2,800	620	1,200	100	93	1,200
Benzo(a)pyrene	2,000	7,000	2,000	1,400	1,800	700	1,100	90	ND	1,100
Benzo(b)fluoranthene	2,000	8,000	7,000	1,800	2,000	730	1,100	100	82	910
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	1,000	1,500	450	630	74	ND	510
Benzo(k)fluoranthene	1,000	4,000	70,000	1,700	2,100	780	990	120	93	990
Chrysene	2,000	7,000	70,000	2,400	3,400	770	1,200	120	120	1,200
Dibenzo(a,h)anthracene	500	1,000	700	310	400	160	180	ND	ND	150
Fluoranthene	4,000	10,000	1,000,000	5,400	7,400	1,200	3,400	200	190	2,900
Fluorene	1,000	2,000	1,000,000	190	340	ND	160	ND	ND	170
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	1,000	1,500	500	630	72	ND	590
Naphthalene	500	1,000	40,000	68	71	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	3,200	5,300	580	2,400	90	97	2,400
Pyrene	4,000	20,000	1,000,000	5,200	6,900	1,200	2,600	160	160	2,300

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0271	R01-100830MB-0272	R01-100830MB-0273	R01-100830MB-0274	R01-100830MB-0275	R01-100830MB-0276	R01-100830MB-0277
	SAMPLE LOCATION			P-33 SB-302B	P-33 SB-302C	P-33 SB-303A	P-33 SB-303B	P-33 SB-303C	P-33 SB-304A	P-33 SB-304B
	LABORATORY NUMBER			AB09467	AB09468	AB09469	AB09470	AB09471	AB09472	AB09473
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	410	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	100	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	91	66	ND	200	830	95
Benzo(a)anthracene	2,000	9,000	7,000	ND	680	230	ND	680	1,600	350
Benzo(a)pyrene	2,000	7,000	2,000	ND	510	130	ND	490	1,000	300
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	460	140	ND	650	1,000	200
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	320	95	ND	370	870	150
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	500	210	ND	660	1,400	300
Chrysene	2,000	7,000	70,000	78	710	260	65	770	1,600	330
Dibenzo(a,h)anthracene	500	1,000	700	ND	100	ND	ND	130	240	59
Fluoranthene	4,000	10,000	1,000,000	120	1,100	540	140	1,600	3,900	700
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	73	360	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	330	110	ND	440	800	150
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	130	ND
Phenanthrene	3,000	20,000	500,000	ND	420	300	68	1,100	3,300	390
Pyrene	4,000	20,000	1,000,000	99	1,000	400	95	1,200	3,400	540

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram (µg/Kg).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0278	R01-100830MB-0279	R01-100830MB-0280	R01-100830MB-0281	R01-100830MB-0282	R01-100830MB-0283	R01-100830MB-0284
	SAMPLE LOCATION			P-33 SB-304C	P-33 SB-305A	P-33 SB-305B	P-33 SB-305C	P-33 SB-306A	P-33 SB-306B	P-33 SB-306C
	LABORATORY NUMBER			AB09474	AB09475	AB09476	AB09477	AB09478	AB09479	AB09480
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	62	170	190	ND	180	ND	ND
Acenaphthylene	500	1,000	600,000	ND	73	88	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	150	570	610	ND	460	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	290	1,700	2,300	150	1,100	240	230
Benzo(a)pyrene	2,000	7,000	2,000	170	1,100	1,800	120	580	190	230
Benzo(b)fluoranthene	2,000	8,000	7,000	270	1,500	1,700	180	910	260	240
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	160	900	1,100	100	460	160	190
Benzo(k)fluoranthene	1,000	4,000	70,000	160	1,400	1,500	160	700	220	180
Chrysene	2,000	7,000	70,000	330	1,800	2,800	180	1,200	300	220
Dibenzo(a,h)anthracene	500	1,000	700	ND	300	310	ND	180	ND	70
Fluoranthene	4,000	10,000	1,000,000	770	5,000	5,800	340	3,200	650	440
Fluorene	1,000	2,000	1,000,000	66	240	260	ND	280	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	130	960	1,100	110	520	160	170
Naphthalene	500	1,000	40,000	ND	ND	82	ND	86	ND	ND
Phenanthrene	3,000	20,000	500,000	620	3,200	3,900	170	3,100	280	230
Pyrene	4,000	20,000	1,000,000	610	4,400	5,500	270	2,500	460	370

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0285	R01-100830MB-0286	R01-100830MB-0287	R01-100830MB-0288	R01-100830MB-0289	R01-100830MB-0290	R01-100830MB-0291
	SAMPLE LOCATION			P-33 SB-307A	P-33 SB-307B	P-33 SB-307C	P-33 SB-308A	P-33 SB-308B	P-33 SB-308C	P-33 SB-309A
	LABORATORY NUMBER			AB09481	AB09482	AB09483	AB09484	AB09485	AB09486	AB09487
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	110	ND	170
Benzo(a)anthracene	2,000	9,000	7,000	100	190	180	80	470	150	450
Benzo(a)pyrene	2,000	7,000	2,000	110	170	180	73	460	160	390
Benzo(b)fluoranthene	2,000	8,000	7,000	93	170	220	ND	410	220	330
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	83	130	140	ND	320	130	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	96	170	180	ND	410	120	260
Chrysene	2,000	7,000	70,000	100	210	210	78	500	180	420
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	130	ND	ND
Fluoranthene	4,000	10,000	1,000,000	180	380	380	170	1,100	300	1,200
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	73
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	130	140	ND	280	120	250
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	92	200	180	110	700	140	950
Pyrene	4,000	20,000	1,000,000	160	290	300	140	850	250	880

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0292	R01-100830MB-0293	R01-100830MB-0294	R01-100830MB-0295	R01-100830MB-0296	R01-100830MB-0297	R01-100830MB-0298
	SAMPLE LOCATION			P-33 SB-309B	P-33 SB-309C	P-33 SB-310A	P-33 SB-310B	P-33 SB-310C	P-33 SB-311A	P-33 SB-311B
	LABORATORY NUMBER			AB09488	AB09489	AB09490	AB09491	AB09492	AB09493	AB09494
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	74	ND	69	68	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	120	ND
Anthracene	1,000	4,000	1,000,000	140	150	220	97	190	230	ND
Benzo(a)anthracene	2,000	9,000	7,000	360	470	600	420	590	1,100	310
Benzo(a)pyrene	2,000	7,000	2,000	320	450	560	390	540	1,100	310
Benzo(b)fluoranthene	2,000	8,000	7,000	360	390	620	410	450	1,000	290
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	240	320	420	270	360	810	240
Benzo(k)fluoranthene	1,000	4,000	70,000	210	360	410	360	480	1,000	270
Chrysene	2,000	7,000	70,000	360	480	630	420	600	1,100	320
Dibenzo(a,h)anthracene	500	1,000	700	97	150	79	110	79	360	110
Fluoranthene	4,000	10,000	1,000,000	840	1,100	1,600	950	ND	2,300	630
Fluorene	1,000	2,000	1,000,000	ND	ND	93	ND	93	93	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	220	310	380	260	330	790	220
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	70	ND
Phenanthrene	3,000	20,000	500,000	700	700	1,100	460	1,000	1,100	250
Pyrene	4,000	20,000	1,000,000	640	810	1,200	730	ND	1,700	480

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0299	R01-100830MB-0300	R01-100830MB-0301	R01-100830MB-0302	R01-100830MB-0303	R01-100830MB-0304	R01-100830MB-0305
	SAMPLE LOCATION			P-33 SB-311C	P-33 SB-312A	P-33 SB-312B	P-33 SB-312C	P-33 SB-313A	P-33 SB-313B	P-33 SB-313C
	LABORATORY NUMBER			AB09495	AB09496	AB09497	AB09498	AB09499	AB09500	AB09501
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	110	84	120	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	150	120	400	390	530	100	ND
Benzo(a)pyrene	2,000	7,000	2,000	150	120	380	400	530	87	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	110	100	390	390	510	110	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	130	95	280	280	400	73	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	80	100	340	310	410	130	ND
Chrysene	2,000	7,000	70,000	160	130	440	420	520	130	ND
Dibenzo(a,h)anthracene	500	1,000	700	110	ND	110	120	160	ND	ND
Fluoranthene	4,000	10,000	1,000,000	120	250	980	900	1200	240	68
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	90	86	270	270	370	74	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	58	110	580	490	620	110	ND
Pyrene	4,000	20,000	1,000,000	100	200	740	680	840	190	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

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Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0306	R01-100830MB-0307	R01-100830MB-0308	R01-100830MB-0309	R01-100830MB-0310	R01-100830MB-0311	R01-100830MB-0312
	SAMPLE LOCATION			P-33 SB-314A	P-33 SB-314B	P-33 SB-314C	P-33 SB-315A	P-33 SB-315B	P-33 SB-315C	P-33 SB-316A
	LABORATORY NUMBER			AB09502	AB09503	AB09504	AB09505	AB09506	AB09507	AB09508
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	110	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	93	510	ND	ND	160
Benzo(a)anthracene	2,000	9,000	7,000	230	ND	490	3,500	170	120	550
Benzo(a)pyrene	2,000	7,000	2,000	260	ND	410	1,800	180	140	430
Benzo(b)fluoranthene	2,000	8,000	7,000	530	ND	440	3,100	200	120	470
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	160	ND	260	ND	130	89	280
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	450	2,300	130	130	530
Chrysene	2,000	7,000	70,000	290	71	590	3,300	250	130	710
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	70	ND	ND	ND	85
Fluoranthene	4,000	10,000	1,000,000	330	110	1,200	5,900	360	240	1,600
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	100	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	150	ND	230	1,300	120	74	300
Naphthalene	500	1,000	40,000	ND	ND	ND	67	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	ND	490	1,800	170	67	1,000
Pyrene	4,000	20,000	1,000,000	300	89	950	8,400	330	190	1,400

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

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Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0313	R01-100830MB-0314	R01-100830MB-0315	R01-100830MB-0316	R01-100830MB-0317	R01-100830MB-0546	R01-100830MB-0547
	SAMPLE LOCATION			P-33 SB-316B	P-33 SB-316C	P-33 SB-317A	P-33 SB-317B	P-33 SB-317C	P-33 SB-318A	P-33 SB-318B
	LABORATORY NUMBER			AB09509	AB09510	AB09511	AB09512	AB09513	AB09514	AB09515
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	68	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	77	ND	73	68	ND	410	67
Benzo(a)anthracene	2,000	9,000	7,000	340	91	230	450	100	2,200	340
Benzo(a)pyrene	2,000	7,000	2,000	290	100	210	330	120	1,600	320
Benzo(b)fluoranthene	2,000	8,000	7,000	390	110	210	420	160	2,300	320
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	230	78	140	220	97	1,000	200
Benzo(k)fluoranthene	1,000	4,000	70,000	350	95	210	450	120	1,600	360
Chrysene	2,000	7,000	70,000	420	120	280	500	150	2,200	390
Dibenzo(a,h)anthracene	500	1,000	700	70	ND	ND	ND	ND	340	64
Fluoranthene	4,000	10,000	1,000,000	790	210	590	960	270	4,600	730
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	64	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	230	69	130	260	99	980	200
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	390	100	400	290	110	1,400	250
Pyrene	4,000	20,000	1,000,000	700	170	470	770	200	4,700	630

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram (µg/Kg).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0548	R01-100830MB-0549	R01-100830MB-0550	R01-100830MB-0551			
	SAMPLE LOCATION			P-33 SB-318C	P-33 SB-319A	P-33 SB-319B	P-33 SB-319C			
	LABORATORY NUMBER			AB09516	AB09517	AB09518	AB09519			
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	2,500	1,000	ND			
Acenaphthylene	500	1,000	600,000	ND	130	200	ND			
Anthracene	1,000	4,000	1,000,000	210	5,700	3,000	64			
Benzo(a)anthracene	2,000	9,000	7,000	910	9,600	6,400	340			
Benzo(a)pyrene	2,000	7,000	2,000	590	5,500	7,300	350			
Benzo(b)fluoranthene	2,000	8,000	7,000	790	8,000	6,100	470			
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	450	3,100	2,600	230			
Benzo(k)fluoranthene	1,000	4,000	70,000	560	7,400	5,700	330			
Chrysene	2,000	7,000	70,000	1,000	8,900	6,400	440			
Dibenzo(a,h)anthracene	500	1,000	700	150	1,100	940	73			
Fluoranthene	4,000	10,000	1,000,000	1,900	20,000	18,000	760			
Fluorene	1,000	2,000	1,000,000	59	2,700	1,300	ND			
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	440	3,000	69	ND			
Naphthalene	500	1,000	40,000	ND	1,300	180	ND			
Phenanthrene	3,000	20,000	500,000	900	33,000	15,000	330			
Pyrene	4,000	20,000	1,000,000	1,700	14,000	17,000	680			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0264	R01-100830MB-0265	R01-100830MB-0266	R01-100830MB-0267	R01-100830MB-0268	R01-100830MB-0269	R01-100830MB-0270
SAMPLE LOCATION		P-33 SB-300A	P-33 SB-300B	P-33 SB-300C	P-33 SB-301A	P-33 SB-301B	P-33 SB-301C	P-33 SB-302A
LABORATORY NUMBER		AB09460	AB09461	AB09462	AB09463	AB09464	AB09465	AB09466
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	11	9.9	10	18	59	11	14
Barium	1,000	130	100	170	140	170	52	110
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	28	24	38	24	20	15	22
Lead	300	310	230	380	290	220	69	120
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	1.3	1.1	0.91	1	ND	ND	0.12
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	1.3	1.1	0.91	1	ND	ND	0.12

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0271	R01-100830MB-0272	R01-100830MB-0273	R01-100830MB-0274	R01-100830MB-0275	R01-100830MB-0276	R01-100830MB-0277
SAMPLE LOCATION		P-33 SB-302B	P-33 SB-302C	P-33 SB-303A	P-33 SB-303B	P-33 SB-303C	P-33 SB-304A	P-33 SB-304B
LABORATORY NUMBER		AB09467	AB09468	AB09469	AB09470	AB09471	AB09472	AB09473
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	14	16	11	10	36	11	7.6
Barium	1,000	560	350	180	110	680	470	180
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	33	40	18	18	50	43	20
Lead	300	410	760	150	1200	1000	1800	200
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	ND	ND	ND	0.11	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	ND	ND	ND	0.11	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0278	R01-100830MB-0279	R01-100830MB-0280	R01-100830MB-0281	R01-100830MB-0282	R01-100830MB-0283	R01-100830MB-0284
SAMPLE LOCATION		P-33 SB-304C	P-33 SB-305A	P-33 SB-305B	P-33 SB-305C	P-33 SB-306A	P-33 SB-306B	P-33 SB-306C
LABORATORY NUMBER		AB09474	AB09475	AB09476	AB09477	AB09478	AB09479	AB09480
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.6	12	11	12	10	9.7	23
Barium	1,000	79	130	120	81	120	100	580
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	15	27	26	19	23	24	30
Lead	300	78	270	240	140	250	210	1300
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	0.98	1	0.28	1.2	0.59	0.24
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	0.98	1	0.28	1.2	0.59	0.24

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0285	R01-100830MB-0286	R01-100830MB-0287	R01-100830MB-0288	R01-100830MB-0289	R01-100830MB-0290	R01-100830MB-0291
SAMPLE LOCATION		P-33 SB-307A	P-33 SB-307B	P-33 SB-307C	P-33 SB-308A	P-33 SB-308B	P-33 SB-308C	P-33 SB-309A
LABORATORY NUMBER		AB09481	AB09482	AB09483	AB09484	AB09485	AB09486	AB09487
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	10	7.5	9	7.8	15	10	6.5
Barium	1,000	130	59	140	78	110	130	83
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	17	16	19	18	21	20	16
Lead	300	180	98	170	83	190	230	110
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.27	0.16	0.38	0.08	0.62	1.2	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.27	0.16	0.38	0.08	0.62	1.2	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0292	R01-100830MB-0293	R01-100830MB-0294	R01-100830MB-0295	R01-100830MB-0296	R01-100830MB-0297	R01-100830MB-0298
SAMPLE LOCATION		P-33 SB-309B	P-33 SB-309C	P-33 SB-310A	P-33 SB-310B	P-33 SB-310C	P-33 SB-311A	P-33 SB-311B
LABORATORY NUMBER		AB09488	AB09489	AB09490	AB09491	AB09492	AB09493	AB09494
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7.9	9.8	8.4	8	13	9.8	8.7
Barium	1,000	69	79	85	120	380	110	270
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	19	29	20	21	21	21	27
Lead	300	90	140	140	220	1000	310	520
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.32	0.52	0.17	0.19	0.17	0.36	0.32
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.32	0.52	0.17	0.19	0.17	0.36	0.32

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0299	R01-100830MB-0300	R01-100830MB-0301	R01-100830MB-0302	R01-100830MB-0303	R01-100830MB-0304	R01-100830MB-0305
SAMPLE LOCATION		P-33 SB-311C	P-33 SB-312A	P-33 SB-312B	P-33 SB-312C	P-33 SB-313A	P-33 SB-313B	P-33 SB-313C
LABORATORY NUMBER		AB09495	AB09496	AB09497	AB09498	AB09499	AB09500	AB09501
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	10	8.9	8.4	8.2	9.4	8.7	8.4
Barium	1,000	130	110	62	85	130	69	44
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	20	18	25	21	23	25	18
Lead	300	99	230	140	210	230	130	36
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	0.25	0.62	0.19	0.5	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	0.25	0.62	0.19	0.5	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0306	R01-100830MB-0307	R01-100830MB-0308	R01-100830MB-0309	R01-100830MB-0310	R01-100830MB-0311	R01-100830MB-0312
SAMPLE LOCATION		P-33 SB-314A	P-33 SB-314B	P-33 SB-314C	P-33 SB-315A	P-33 SB-315B	P-33 SB-315C	P-33 SB-316A
LABORATORY NUMBER		AB09502	AB09503	AB09504	AB09505	AB09506	AB09507	AB09508
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	9.2	8.7	11	13	14	6	11
Barium	1,000	87	68	87	72	78	27	130
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	20	18	22	25	21	18	28
Lead	300	120	120	180	120	89	17	180
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	0.48	0.65	0.4	ND	0.7
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	0.48	0.65	0.4	ND	0.7

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0313	R01-100830MB-0314	R01-100830MB-0315	R01-100830MB-0316	R01-100830MB-0317	R01-100830MB-0546	R01-100830MB-0547
SAMPLE LOCATION		P-33 SB-316B	P-33 SB-316C	P-33 SB-317A	P-33 SB-317B	P-33 SB-317C	P-33 SB-318A	P-33 SB-318B
LABORATORY NUMBER		AB09509	AB09510	AB09511	AB09512	AB09513	AB09514	AB09515
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	11	13	9.4	12	13	10	9.4
Barium	1,000	63	270	110	110	280	45	31
Cadmium	2	ND	ND	ND	ND	13	ND	ND
Chromium	30 (T)	23	24	22	23	26	27	21
Lead	300	250	350	150	190	180	120	40
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.5	0.28	0.13	0.42	0.18	1.1	0.24
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.5	0.28	0.13	0.42	0.18	1.1	0.24

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 33 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0548	R01-100830MB-0549	R01-100830MB-0550	R01-100830MB-0551		
SAMPLE LOCATION		P-33 SB-318C	P-33 SB-319A	P-33 SB-319B	P-33 SB-319C		
LABORATORY NUMBER		AB09516	AB09517	AB09518	AB09519		
ANALYTES	S-1 & GW-2						
METALS							
Arsenic	20	12	9.8	12	11		
Barium	1,000	44	110	120	170		
Cadmium	2	ND	ND	ND	ND		
Chromium	30 (T)	21	27	27	27		
Lead	300	99	270	250	340		
PCBs							
Aroclor-1242	2	ND	ND	ND	ND		
Aroclor-1248	2	ND	ND	ND	ND		
Aroclor-1254	2	ND	ND	ND	ND		
Aroclor-1260	2	0.27	1.7	1.1	1.4		
Aroclor-1262	2	ND	ND	ND	ND		
Aroclor-1268	2	ND	ND	ND	ND		
TOTAL PCBs	2	0.27	1.7	1.1	1.4		

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 3

**SUMMARY OF
LEAD FIELD SCREENING RESULTS
33 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

Sample Number	Sample Location	Sample Collection Date	XRF Lead Screening Results (mg/Kg)	EPA Laboratory Lead Confirmation Results (mg/Kg)
R01-100830MB-0680	P33 Grid 304 Floor (soil) 1'	5/24/2011	1294	----
R01-100830MB-0681	P33 Grid 304 Floor (ash) 1'	5/24/2011	331	----
R01-100830MB-0728	P33 Grid 304 Floor 1' 6"	5/24/2011	340	----
R01-100830MB-0682	P33 Grid 304 WSW 1'	5/24/2011	150.4	140
R01-100830MB-0683	P33 Grid 304 NSW 1'	5/24/2011	192.2	----
R01-100830MB-0684	P33 Grid 304 ESW 1'	5/24/2011	390	----
R01-100830MB-0685	P33 Grid 303 Floor 3'	5/24/2011	779	----
R01-100830MB-0686	P33 Grid 303 NSW 3'	5/24/2011	352	----
R01-100830MB-0687	P33 Grid 303 ESW 3'	5/24/2011	374	----
R01-100830MB-0688	P33 Grid 303 WSW 3'	5/24/2011	540	----
R01-100830MB-0689	P33 Grid 303 Floor 3' 6"	5/24/2011	36.7	30
R01-100830MB-0703	P33 Grid 302 Floor 3' N	5/26/2011	76.5	120
R01-100830MB-0704	P33 Grid 301 Floor 2'	5/27/2011	1032	----
R01-100830MB-0705	P33 Grid 301 Floor 3'	5/27/2011	50.7	----
R01-100830MB-0710	P33 Grid 301 Floor 1' W	5/31/2011	84.5	----
R01-100830MB-0711	P33 Grid 301 Floor 3' N	5/31/2011	97.1	45
R01-100830MB-0712	P33 Grid 301 Floor 3' S	6/1/2011	409	----
R01-100830MB-0713	P33 Grid 301 WSW 3'	6/1/2011	212.4	----
R01-100830MB-0722	P33 Grid 300 Floor 3'	6/2/2011	64	----
R01-100830MB-0723	P33 Grid 301 WSW 3'	6/2/2011	264	----

Notes:

ND = Not Detected

---- = Not analyzed

EPA Laboratory = EPA Office of Environmental Measurement and Evaluation Laboratory,
North Chelmsford, Massachusetts

mg/Kg = Milligrams per Kilogram

XRF = X-Ray Fluorescence

NSW = North Side Wall

ESW = East Side Wall

WSW = West Side Wall

N, S, E, W = Indicates that only a portion (north, south, east, or west) of the grid was sampled.

' = foot

" = inch

TABLE 4

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 33 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0701	R01-100830MB-0702	R01-100830MB-0718	R01-100830MB-0719		
SAMPLE LOCATION		P33 Grid 304 WSW 1'	P33 Grid 303 Floor 3' 6"	P33 Grid 302 Floor 3' N	P33 Grid 301 Floor 3' N		
LABORATORY NUMBER		AB18065	AB18066	AB18182	AB18183		
ANALYTES	S-1 & GW-2						
METALS							
Arsenic	20	9	7.2	7.7	5.7		
Barium	1,000	57	63	100	36		
Cadmium	2	ND	ND	ND	ND		
Chromium	30 (T)	23	12	14	16		
Lead	300	140	30	120	45		
PCBs							
Aroclor-1016	2	ND	ND	ND	ND		
Aroclor-1221	2	ND	ND	ND	ND		
Aroclor-1232	2	ND	ND	ND	ND		
Aroclor-1242	2	ND	ND	ND	ND		
Aroclor-1248	2	ND	ND	ND	ND		
Aroclor-1254	2	ND	ND	ND	ND		
Aroclor-1260	2	0.76	ND	ND	ND		
Aroclor-1262	2	ND	ND	ND	ND		
Aroclor-1268	2	ND	ND	ND	ND		
TOTAL PCBs	2	0.76	ND	ND	ND		

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

Appendix C

Photodocumentation Log

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PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of 33 Hoffman Avenue. Photograph taken facing south.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1139 hours
CAMERA: Samsung SL605



SCENE: View of the backyard at 33 Hoffman Avenue. Photograph taken facing west.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1139 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the side yard between 33 and 31 Hoffman Avenue. Photograph taken facing south.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1139 hours
CAMERA: Samsung SL605



SCENE: View of the fenced-off excavation area at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 24 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0851 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 24 May 2011

TIME: 0958 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the ash layer beneath the driveway at 33 Hoffman Avenue. Photograph taken facing west.

DATE: 24 May 2011

TIME: 1430 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 26 May 2011

PHOTOGRAPHER: R. Sharp

TIME: 1325 hours

CAMERA: Samsung SL605



SCENE: View of backfilling activities at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 27 May 2011

PHOTOGRAPHER: R. Sharp

TIME: 0810 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of topsoil at 33 Hoffman Avenue. Photograph taken facing north.

DATE: 6 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1144 hours
CAMERA: Samsung SL605



SCENE: View of topsoil at 33 Hoffman Avenue. Photograph taken facing west.

DATE: 6 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1558 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of a new tree in the backyard at 33 Hoffman Avenue. Photograph taken facing west.

DATE: 10 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1442 hours

CAMERA: Samsung SL605



SCENE: View of a new tree in the front yard at 33 Hoffman Avenue. Photograph taken facing west.

DATE: 20 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1018 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the restored yard at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 24 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1353 hours

CAMERA: Samsung SL605



SCENE: View of the restored yard at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 24 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1353 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 33 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the restored yard at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 28 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1710 hours

CAMERA: Samsung SL605



SCENE: View of site restoration activities in the backyard at 33 Hoffman Avenue. Photograph taken facing south.

DATE: 28 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1648 hours

CAMERA: Samsung SL605

**REMOVAL PROGRAM
AFTER ACTION REPORT
FOR THE
TOMBARELLO SITE
LAWRENCE, ESSEX COUNTY, MASSACHUSETTS
9 MAY 2011 THROUGH 28 JUNE 2011

RESIDENTIAL PROPERTY – 41 HOFFMAN AVENUE**

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
5 Post Office Square, Suite 100
Boston, Massachusetts 02109

CONTRACT NO. EP-W-05-042

TDD NO. 10-07-0008

TASK NO. 0653

DC NO. R-6934

Submitted by:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team III (START)
3 Riverside Drive
Andover, MA 01810

December 2011

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in Soil Analyses

Appendix C

Photodocumentation Log

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1.0 INTRODUCTION

The Weston Solutions, Inc., Superfund Technical Assessment and Response Team III (START) was tasked under Technical Direction Document (TDD) Number (No.) 01-10-07-0008 to provide technical support to U.S. Environmental Protection Agency (EPA) Region I On-Scene Coordinator (OSC) Eric Vanderboom removal activities at the Tombarello site, located in the Town of Lawrence, Essex County, Massachusetts (see Appendix A, Figures, Figure 1 - Site Location Map). Specifically, START conducted post-excavation soil sampling activities at several residential properties located along the periphery of the Tombarello Site, to determine whether cleanup levels had been met at the residential properties. Guardian Environmental Services, Inc. (GES), an Emergency Rapid Response Services (ERRS) contractor, was tasked to conduct soil excavation activities.

Removal activities included accessing residential properties; collecting and analyzing surface soil samples to determine the extent of contamination; removing fencing and vegetation from access ways and work areas; excavating, stockpiling, and disposing of contaminated soils; collecting post-excavation soil samples from the floor and walls of excavations; conducting additional excavation as necessary, based on analysis of post-excavation samples; conducting perimeter air monitoring; and conducting restoration activities that included backfilling excavations with clean soil, spreading grass seed, and replacing vegetation removed or damaged during the removal.

2.0 SITE DESCRIPTION

The 41 Hoffman Avenue property (the property) is an approximately 0.20-acre parcel. The property is bordered by Hoffman Avenue to the north, residential properties to the west and east, and the Tombarello Site (207 Marston Street) to the south. The property features include the residence, a paved driveway and walkways, and a detached garage (see Figure 2 - Soil Boring Location Map).

3.0 NARRATIVE CHRONOLOGY

On 1 September 2010 and 6 April 2011, EPA and WESTON START personnel accessed the property to collect surface and subsurface soil samples as part of the Tombarello Site Preliminary Assessment/Site Investigation (PA/SI). Sampling design and soil sampling activities were conducted in accordance with the EPA-approved site-specific Sampling and Analysis Plan (SAP), prepared as a separate document, entitled *Sampling and Analysis Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Site activities were also conducted in accordance with health and safety requirements outlined in the site-specific Health and Safety Plan (HASP), entitled *Health and Safety Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Sampling results from the PA/SI are presented in Appendix B, Tables, Tables 1 and 2.

On 10 May 2011 through 2 June 2011, START personnel accessed the property to collect post-excavation soil samples. The samples were field-screened to determine whether lead was present in the soil at levels above the direct exposure criteria of 300 parts per million

(ppm) [equivalent to milligrams per Kilogram (mg/Kg)], as established in the *Massachusetts Department of Environmental Protection Massachusetts Contingency Plan (MCP) S-1 Standards*; and whether site-specific cleanup goals had been attained. All post-excavation sampling activities were conducted in accordance with the site-specific SAP, and with the site-specific HASP.

Shaw Environmental & Infrastructure, Inc., Emergency Rapid Response Services (ERRS) personnel cleared vegetation from the property, and excavated soil at 13 grids determined to contain lead at concentrations above MCP S-1 Standards (see Figure 3 - Removal Grid Location Map). Grids were excavated to depths of 1 to 3 feet below ground surface (bgs). An ash layer was encountered in Grids 405, 406, and 407. To completely remove the ash layer, these grids were excavated to depths down to 3.5 feet bgs, until native material was encountered. Soil excavation and removal activities were performed by ERRS personnel from 10 May 2011 to 2 June 2011. Air monitoring for particulates was conducted during excavation activities, and no readings above action levels were recorded.

Approximately 32 post-excavation soil samples were collected and field-screened for lead during the investigation. Field soil screening results ranged from 21.6 mg/Kg to 773 mg/Kg. In addition, approximately 10 percent of the soil samples collected for field screening were submitted for confirmation analysis for metals (including lead) and polychlorinated biphenyls (PCBs) at the EPA Office of Environmental Measurement and Evaluation (OEME) New England Regional Laboratory (NERL) in North Chelmsford, MA. Confirmation analysis revealed that one sample, P41 Grid 407 WSW 3', had a result of 620 ppm for lead. However, this sample was collected from the west side wall of Grid 407, which was located underneath the driveway at 41 Hoffman Avenue. Field screening results are included in Table 3, and laboratory results are included in Table 4.

Upon completion of excavation activities, ERRS personnel performed site restoration activities, which included backfilling excavated areas, grading topsoil, and spreading turf grass seed, as needed.

A photodocumentation log of investigation and removal activities is included as Appendix C, Photodocumentation Log.

Appendix A

Figures

Figure 1 - Site Location Map

Figure 2 - Soil Boring Location Map

Figure 3 - Removal Grid Location Map

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Figure 1

Site Location Map

Tombarello Site
207 Marston Street
Lawrence, MA 01840

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-07-0007
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: Robert Sharp
Modified on: 6 October 2010

Data Sources:

Topos: MicroPath/USGS
 Quadrangle Name: South Groveland
 All other data: START



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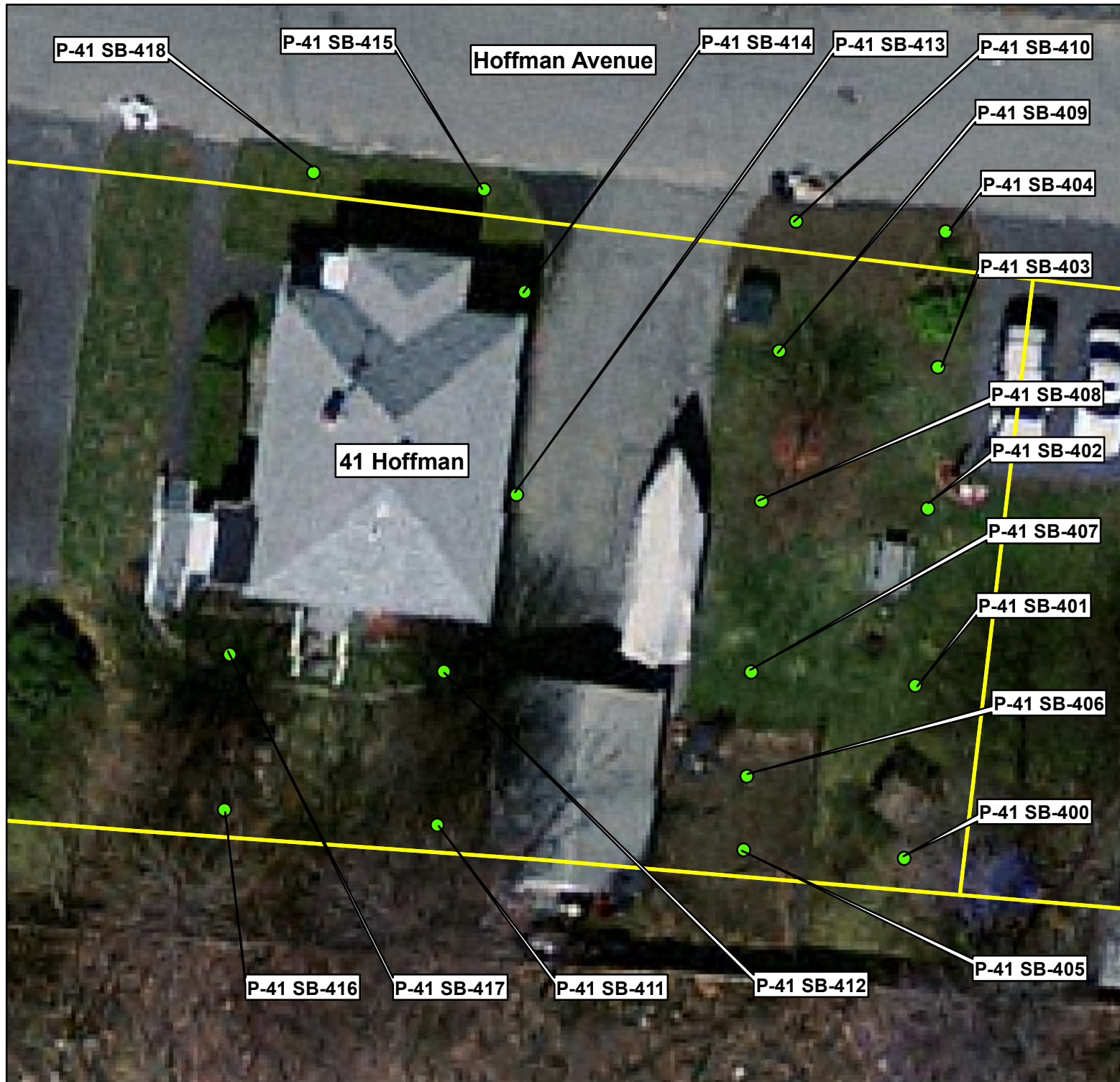




Figure 2
Soil Boring Location Map
41 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts


EPA Region I
 Superfund Technical Assessment and
 Response Team (START) III
 Contract No. EP-W-05-042

TDD Number: 10-07-0008
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2010

LEGEND

 Property Boundaries

 P-41 Soil Borings


 0 5 10 20 30 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START

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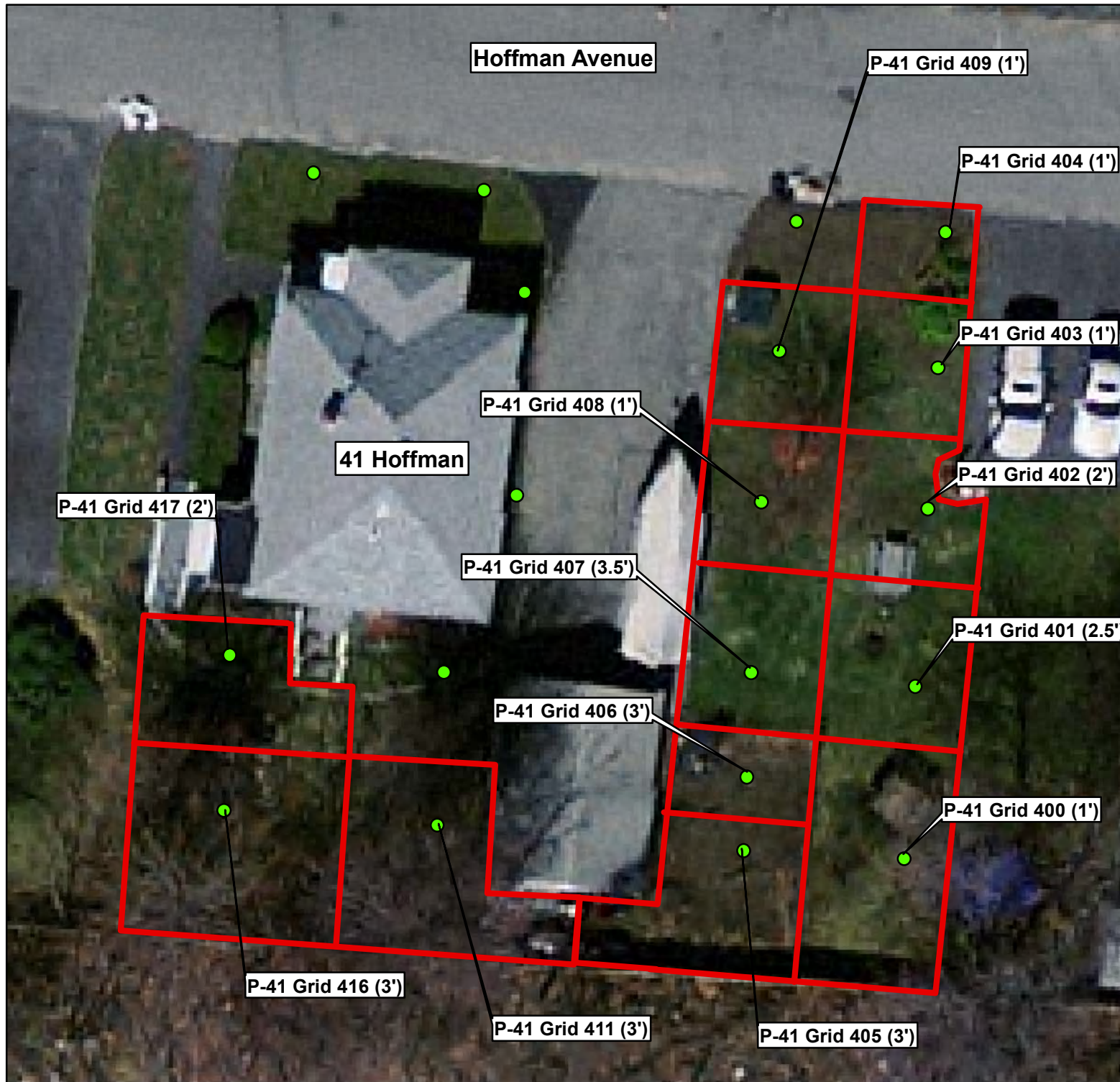




Figure 3
Removal Grid Location Map
41 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts


EPA Region I
 Superfund Technical Assessment and
 Response Team (START) III
 Contract No. EP-W-05-042

TDD Number: 10-07-0008
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2011

LEGEND

 Removal Grids
 P-41 Soil Borings

() = Number indicates depth to which grid was excavated


 0 5 10 20 30 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START

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Appendix B

Tables

Table 1 - Summary Table, Polycyclic Aromatic Hydrocarbons (PAHs) in Soil Analysis

Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0153	R01-100830MB-0154	R01-100830MB-0155	R01-100830MB-0156	R01-100830MB-0157	R01-100830MB-0158	R01-100830MB-0159
	SAMPLE LOCATION			P-41 SB-400A	P-41 SB-400B	P-41 SB-400C	P-41 SB-401A	P-41 SB-401B	P-41 SB-401C	P-41 SB-402A
	LABORATORY NUMBER			AB09372	AB09373	AB09374	AB09375	AB09376	AB09377	AB09378
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	140	ND	ND	82	ND	ND	120
Benzo(a)anthracene	2,000	9,000	7,000	610	160	ND	460	140	ND	570
Benzo(a)pyrene	2,000	7,000	2,000	640	180	ND	500	140	ND	610
Benzo(b)fluoranthene	2,000	8,000	7,000	640	190	ND	560	180	ND	570
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	450	140	ND	410	120	ND	470
Benzo(k)fluoranthene	1,000	4,000	70,000	550	190	ND	420	85	ND	520
Chrysene	2,000	7,000	70,000	690	180	ND	530	140	ND	560
Dibenzo(a,h)anthracene	500	1,000	700	100	60	ND	170	ND	ND	200
Fluoranthene	4,000	10,000	1,000,000	1,300	360	ND	960	300	ND	960
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	430	120	ND	360	110	ND	430
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	650	170	ND	460	170	ND	470
Pyrene	4,000	20,000	1,000,000	1,100	310	ND	870	ND	ND	850

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

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TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0160	R01-100830MB-0161	R01-100830MB-0162	R01-100830MB-0163	R01-100830MB-0164	R01-100830MB-0165	R01-100830MB-0210
	SAMPLE LOCATION			P-41 SB-402B	P-41 SB-402C	P-41 SB-403A	P-41 SB-403B	P-41 SB-403C	P-41 SB-404A	P-41 SB-404B
	LABORATORY NUMBER			AB09379	AB09380	AB09381	AB09382	AB09383	AB09384	AB09385
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	200	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	78	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	79	ND	130	730	ND
Benzo(a)anthracene	2,000	9,000	7,000	230	ND	470	450	280	1,900	89
Benzo(a)pyrene	2,000	7,000	2,000	260	ND	470	420	230	1,700	96
Benzo(b)fluoranthene	2,000	8,000	7,000	240	ND	460	280	200	1,500	110
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	200	ND	380	260	140	1,100	82
Benzo(k)fluoranthene	1,000	4,000	70,000	220	ND	510	380	210	1,400	84
Chrysene	2,000	7,000	70,000	210	ND	530	430	260	1,800	96
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	110	66	74	250	ND
Fluoranthene	4,000	10,000	1,000,000	390	ND	960	790	620	4,600	160
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	270	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	170	ND	350	250	150	1,000	80
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	70	ND
Phenanthrene	3,000	20,000	500,000	140	ND	410	260	450	3,600	62
Pyrene	4,000	20,000	1,000,000	340	ND	820	ND	500	3,600	140

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0211	R01-100830MB-0212	R01-100830MB-0213	R01-100830MB-0214	R01-100830MB-0215	R01-100830MB-0216	R01-100830MB-0217
	SAMPLE LOCATION			P-41 SB-404C	P-41 SB-405A	P-41 SB-405B	P-41 SB-405C	P-41 SB-406A	P-41 SB-406B	P-41 SB-406C
	LABORATORY NUMBER			AB09386	AB09387	AB09388	AB09389	AB09390	AB09391	AB09392
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	64	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	74	78	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	230	94	ND	170	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	1,000	710	110	680	150	230
Benzo(a)pyrene	2,000	7,000	2,000	ND	990	750	120	620	170	210
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	860	640	120	600	150	180
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	780	620	110	440	140	180
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	750	710	100	540	170	210
Chrysene	2,000	7,000	70,000	ND	980	730	110	650	170	210
Dibenzo(a,h)anthracene	500	1,000	700	ND	140	250	ND	88	ND	97
Fluoranthene	4,000	10,000	1,000,000	ND	2,000	1,100	180	1,400	290	400
Fluorene	1,000	2,000	1,000,000	ND	73	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	720	570	92	410	130	150
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	1,000	370	81	730	130	160
Pyrene	4,000	20,000	1,000,000	ND	1,500	ND	150	1,100	250	330

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0218	R01-100830MB-0219	R01-100830MB-0220	R01-100830MB-0221	R01-100830MB-0222	R01-100830MB-0223	R01-100830MB-0224
	SAMPLE LOCATION			P-41 SB-407A	P-41 SB-407B	P-41 SB-407C	P-41 SB-408A	P-41 SB-408B	P-41 SB-408C	P-41 SB-409A
	LABORATORY NUMBER			AB09393	AB09394	AB09395	AB09396	AB09397	AB09398	AB09399
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	69	ND	77	190	59	ND	ND
Acenaphthylene	500	1,000	600,000	ND	130	410	76	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	280	490	1,500	530	310	72	91
Benzo(a)anthracene	2,000	9,000	7,000	940	1,900	3,600	1,400	1,200	290	400
Benzo(a)pyrene	2,000	7,000	2,000	890	1,700	2,900	1,400	1,100	260	380
Benzo(b)fluoranthene	2,000	8,000	7,000	880	1,600	2,300	1,300	1,000	220	350
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	650	1,100	1,800	960	740	180	280
Benzo(k)fluoranthene	1,000	4,000	70,000	680	1,300	2,600	1,100	940	260	350
Chrysene	2,000	7,000	70,000	920	1,700	3,000	1,500	1,200	290	400
Dibenzo(a,h)anthracene	500	1,000	700	150	480	770	ND	ND	ND	65
Fluoranthene	4,000	10,000	1,000,000	2,100	4,200	9,300	3,600	2,300	570	850
Fluorene	1,000	2,000	1,000,000	70	110	370	180	82	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	580	1,100	1,700	870	670	160	240
Naphthalene	500	1,000	40,000	ND	91	140	120	ND	2,400	ND
Phenanthrene	3,000	20,000	500,000	1,100	2,000	6,200	2,500	1,200	330	420
Pyrene	4,000	20,000	1,000,000	1,800	3,700	7,200	3,100	2,000	510	720

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0225	R01-100830MB-0226	R01-100830MB-0227	R01-100830MB-0228	R01-100830MB-0229	R01-100830MB-0230	R01-100830MB-0231
	SAMPLE LOCATION			P-41 SB-409B	P-41 SB-409C	P-41 SB-410A	P-41 SB-410B	P-41 SB-410C	P-41 SB-411A	P-41 SB-411B
	LABORATORY NUMBER			AB09400	AB09401	AB09402	AB09403	AB09404	AB09405	AB09406
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	730	160	ND	120	ND
Acenaphthylene	500	1,000	600,000	ND	ND	1,700	ND	ND	120	56
Anthracene	1,000	4,000	1,000,000	ND	99	8,200	460	ND	530	160
Benzo(a)anthracene	2,000	9,000	7,000	96	340	21,000	970	120	1,900	980
Benzo(a)pyrene	2,000	7,000	2,000	86	300	18,000	820	120	1,800	940
Benzo(b)fluoranthene	2,000	8,000	7,000	83	260	17,000	710	110	1,900	1,000
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	180	9,400	460	86	1,200	590
Benzo(k)fluoranthene	1,000	4,000	70,000	87	280	14,000	710	100	1,700	900
Chrysene	2,000	7,000	70,000	94	310	18,000	910	110	1,900	980
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	2,400	ND	ND	230	ND
Fluoranthene	4,000	10,000	1,000,000	170	640	55,000	2,100	210	3,900	1,700
Fluorene	1,000	2,000	1,000,000	ND	ND	2,400	210	ND	170	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	190	9,900	480	94	1,100	570
Naphthalene	500	1,000	40,000	ND	ND	500	120	ND	110	ND
Phenanthrene	3,000	20,000	500,000	94	420	20,000	1,900	71	2,400	680
Pyrene	4,000	20,000	1,000,000	160	550	40,000	1,900	200	3,200	1,500

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0232	R01-100830MB-0233	R01-100830MB-0234	R01-100830MB-0235	R01-100830MB-0236	R01-100830MB-0237	R01-100830MB-0238
	SAMPLE LOCATION			P-41 SB-411C	P-41 SB-412A	P-41 SB-412B	P-41 SB-412C	P-41 SB-413A	P-41 SB-413B	P-41 SB-413C
	LABORATORY NUMBER			AB09407	AB09408	AB09409	AB09410	AB09411	AB09412	AB09413
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	59	ND	ND	ND	57	ND	ND
Anthracene	1,000	4,000	1,000,000	140	ND	ND	ND	69	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	670	130	ND	ND	560	96	ND
Benzo(a)pyrene	2,000	7,000	2,000	580	120	ND	ND	190	100	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	560	110	70	ND	520	110	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	440	86	ND	ND	480	81	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	530	120	ND	ND	660	80	ND
Chrysene	2,000	7,000	70,000	600	130	ND	ND	620	97	ND
Dibenzo(a,h)anthracene	500	1,000	700	74	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	1,300	280	100	ND	ND	180	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	390	89	ND	ND	430	ND	ND
Naphthalene	500	1,000	40,000	68	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	710	180	ND	ND	480	64	ND
Pyrene	4,000	20,000	1,000,000	990	230	90	ND	1,000	150	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0239	R01-100830MB-0240	R01-100830MB-0241	R01-100830MB-0242	R01-100830MB-0243	R01-100830MB-0244	R01-100830MB-0245
	SAMPLE LOCATION			P-41 SB-414A	P-41 SB-414B	P-41 SB-414C	P-41 SB-415A	P-41 SB-415B	P-41 SB-415C	P-41 SB-416A
	LABORATORY NUMBER			AB09414	AB09415	AB09416	AB09417	AB09418	AB09419	AB09420
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	99	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	560	80	69	74	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	890	120	80	260	ND	ND	78
Benzo(a)anthracene	2,000	9,000	7,000	5,400	610	570	900	ND	ND	340
Benzo(a)pyrene	2,000	7,000	2,000	5,400	620	540	830	ND	ND	360
Benzo(b)fluoranthene	2,000	8,000	7,000	4,500	490	450	800	ND	ND	350
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	3,100	400	360	580	ND	ND	290
Benzo(k)fluoranthene	1,000	4,000	70,000	4,900	590	500	600	ND	ND	360
Chrysene	2,000	7,000	70,000	5,100	590	540	920	ND	ND	360
Dibenzo(a,h)anthracene	500	1,000	700	790	150	170	110	ND	ND	110
Fluoranthene	4,000	10,000	1,000,000	9,600	1,100	920	2,400	ND	ND	710
Fluorene	1,000	2,000	1,000,000	210	ND	ND	55	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	3,200	390	330	540	ND	ND	270
Naphthalene	500	1,000	40,000	120	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	3,500	410	290	1,300	ND	ND	330
Pyrene	4,000	20,000	1,000,000	7,300	890	770	1,700	ND	ND	580

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0246	R01-100830MB-0247	R01-100830MB-0248	R01-100830MB-0249	R01-100830MB-0250	R01-100830MB-0251	R01-100830MB-0252
	SAMPLE LOCATION			P-41 SB-416B	P-41 SB-416C	P-41 SB-417A	P-41 SB-417B	P-41 SB-417C	P-41 SB-418A	P-41 SB-418B
	LABORATORY NUMBER			AB09421	AB09422	AB09423	AB09424	AB09425	AB09426	AB09427
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	1,100	ND	ND	ND	ND	140
Acenaphthylene	500	1,000	600,000	86	ND	ND	ND	ND	ND	87
Anthracene	1,000	4,000	1,000,000	210	2,700	91	ND	ND	ND	270
Benzo(a)anthracene	2,000	9,000	7,000	740	38,000	580	180	110	290	1,100
Benzo(a)pyrene	2,000	7,000	2,000	700	53,000	610	180	100	250	1,000
Benzo(b)fluoranthene	2,000	8,000	7,000	640	45,000	630	190	130	300	900
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	600	28,000	460	140	70	190	620
Benzo(k)fluoranthene	1,000	4,000	70,000	510	35,000	510	150	89	220	860
Chrysene	2,000	7,000	70,000	820	35,000	620	190	110	330	1,100
Dibenzo(a,h)anthracene	500	1,000	700	200	5,700	150	70	ND	ND	300
Fluoranthene	4,000	10,000	1,000,000	1,400	39,000	1,200	330	190	510	2,700
Fluorene	1,000	2,000	1,000,000	88	510	ND	ND	ND	ND	130
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	480	30,000	450	130	70	170	610
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	81
Phenanthrene	3,000	20,000	500,000	1,000	8,500	480	130	86	230	1,800
Pyrene	4,000	20,000	1,000,000	1,200	34,000	870	250	130	390	2,100

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0253	R01-100830MB-0254	R01-100830MB-0255	R01-100830MB-0256			
	SAMPLE LOCATION			P-41 SB-418C	P-41 SB-419A	P-41 SB-419B	P-41 SB-419C			
	LABORATORY NUMBER			AB09428	AB09429	AB09430	AB09431			
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND			
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND			
Anthracene	1,000	4,000	1,000,000	ND	72	ND	ND			
Benzo(a)anthracene	2,000	9,000	7,000	ND	350	77	ND			
Benzo(a)pyrene	2,000	7,000	2,000	ND	360	76	ND			
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	380	86	ND			
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	280	68	ND			
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	330	69	ND			
Chrysene	2,000	7,000	70,000	ND	380	83	ND			
Dibenzo(a,h)anthracene	500	1,000	700	ND	120	ND	ND			
Fluoranthene	4,000	10,000	1,000,000	72	730	140	ND			
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND			
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	260	62	ND			
Naphthalene	500	1,000	40,000	ND	ND	ND	ND			
Phenanthrene	3,000	20,000	500,000	ND	350	67	ND			
Pyrene	4,000	20,000	1,000,000	ND	590	120	ND			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0153	R01-100830MB-0154	R01-100830MB-0155	R01-100830MB-0156	R01-100830MB-0157	R01-100830MB-0158	R01-100830MB-0159
SAMPLE LOCATION		P-41 SB-400A	P-41 SB-400B	P-41 SB-400C	P-41 SB-401A	P-41 SB-401B	P-41 SB-401C	P-41 SB-402A
LABORATORY NUMBER		AB09372	AB09373	AB09374	AB09375	AB09376	AB09377	AB09378
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	12	6.9	5.5	12	8.9	7.2	12
Barium	1,000	88	110	100	74	45	33	470
Cadmium	2	ND	ND	ND	ND	ND	ND	1.1
Chromium	30 (T)	21	24	18	20	19	19	27
Lead	300	420	440	53	310	130	35	1,100
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	1.5	0.41	ND	0.44	0.29	0.2	0.44
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	1.5	0.41	ND	0.44	0.29	0.2	0.44

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0160	R01-100830MB-0161	R01-100830MB-0162	R01-100830MB-0163	R01-100830MB-0164	R01-100830MB-0165	R01-100830MB-0210
SAMPLE LOCATION		P-41 SB-402B	P-41 SB-402C	P-41 SB-403A	P-41 SB-403B	P-41 SB-403C	P-41 SB-404A	P-41 SB-404B
LABORATORY NUMBER		AB09379	AB09380	AB09381	AB09382	AB09383	AB09384	AB09385
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	11	5	16	17	9.3	15	6
Barium	1,000	79	30	130	380	130	140	48
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	18	17	25	37	22	23	10
Lead	300	300	30	470	1,400	200	1,700	130
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	0.84	0.28	ND	0.21	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	0.84	0.28	ND	0.21	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
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 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0211	R01-100830MB-0212	R01-100830MB-0213	R01-100830MB-0214	R01-100830MB-0215	R01-100830MB-0216	R01-100830MB-0217
SAMPLE LOCATION		P-41 SB-404C	P-41 SB-405A	P-41 SB-405B	P-41 SB-405C	P-41 SB-406A	P-41 SB-406B	P-41 SB-406C
LABORATORY NUMBER		AB09386	AB09387	AB09388	AB09389	AB09390	AB09391	AB09392
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7.3	14	12	5.8	11	16	16
Barium	1,000	69	170	250	80	160	360	240
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	14	32	22	16	28	29	25
Lead	300	110	470	460	150	390	480	480
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	1.2	0.36	0.3	1.1	0.34	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	1.2	0.36	0.3	1.1	0.34	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0218	R01-100830MB-0219	R01-100830MB-0220	R01-100830MB-0221	R01-100830MB-0222	R01-100830MB-0223	R01-100830MB-0224
SAMPLE LOCATION		P-41 SB-407A	P-41 SB-407B	P-41 SB-407C	P-41 SB-408A	P-41 SB-408B	P-41 SB-408C	P-41 SB-409A
LABORATORY NUMBER		AB09393	AB09394	AB09395	AB09396	AB09397	AB09398	AB09399
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	12	14	15	16	31	23	13
Barium	1,000	200	340	360	130	280	360	130
Cadmium	2	ND	ND	ND	ND	ND	2.4	ND
Chromium	30 (T)	23	31	55	29	31	27	28
Lead	300	3,600	430	1,600	320	990	260	2,600
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.37	0.22	ND	1.1	0.52	ND	0.43
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.37	0.22	ND	1.1	0.52	ND	0.43

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0225	R01-100830MB-0226	R01-100830MB-0227	R01-100830MB-0228	R01-100830MB-0229	R01-100830MB-0230	R01-100830MB-0231
SAMPLE LOCATION		P-41 SB-409B	P-41 SB-409C	P-41 SB-410A	P-41 SB-410B	P-41 SB-410C	P-41 SB-411A	P-41 SB-411B
LABORATORY NUMBER		AB09400	AB09401	AB09402	AB09403	AB09404	AB09405	AB09406
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	15	9.9	12	8.6	6.8	16	22
Barium	1,000	380	130	74	110	49	810	310
Cadmium	2	ND	ND	ND	ND	ND	12	5.9
Chromium	30 (T)	36	23	31	21	12	49	28
Lead	300	590	330	300	150	40	810	700
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	0.76	ND	ND	0.78	0.21
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	0.76	ND	ND	0.78	0.21

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0232	R01-100830MB-0233	R01-100830MB-0234	R01-100830MB-0235	R01-100830MB-0236	R01-100830MB-0237	R01-100830MB-0238
SAMPLE LOCATION		P-41 SB-411C	P-41 SB-412A	P-41 SB-412B	P-41 SB-412C	P-41 SB-413A	P-41 SB-413B	P-41 SB-413C
LABORATORY NUMBER		AB09407	AB09408	AB09409	AB09410	AB09411	AB09412	AB09413
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	25	11	5.7	5.9	8.9	7.9	4.5
Barium	1,000	130	110	49	48	140	110	29
Cadmium	2	3.1	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	35	20	19	15	25	30	16
Lead	300	180	300	99	130	500	300	5.2
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.28	ND	ND	ND	0.78	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.28	ND	ND	ND	0.78	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0239	R01-100830MB-0240	R01-100830MB-0241	R01-100830MB-0242	R01-100830MB-0243	R01-100830MB-0244	R01-100830MB-0245
SAMPLE LOCATION		P-41 SB-414A	P-41 SB-414B	P-41 SB-414C	P-41 SB-415A	P-41 SB-415B	P-41 SB-415C	P-41 SB-416A
LABORATORY NUMBER		AB09414	AB09415	AB09416	AB09417	AB09418	AB09419	AB09420
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	11	7.4	4.7	7.3	4.7	4.7	16
Barium	1,000	61	120	23	26	21	26	420
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	35	24	20	22	24	15	30
Lead	300	140	77	18	87	14	12	920
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.56	ND	ND	0.37	ND	ND	0.9
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.56	ND	ND	0.37	ND	ND	0.9

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
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 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0246	R01-100830MB-0247	R01-100830MB-0248	R01-100830MB-0249	R01-100830MB-0250	R01-100830MB-0251	R01-100830MB-0252
SAMPLE LOCATION		P-41 SB-416B	P-41 SB-416C	P-41 SB-417A	P-41 SB-417B	P-41 SB-417C	P-41 SB-418A	P-41 SB-418B
LABORATORY NUMBER		AB09421	AB09422	AB09423	AB09424	AB09425	AB09426	AB09427
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	21	19	14	6.1	6.9	13	7.2
Barium	1,000	3,100	1,200	190	40	64	540	210
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	68	50	24	17	16	30	21
Lead	300	7,000	3,200	870	110	190	580	370
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.22	0.28	0.44	ND	ND	0.35	0.3
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.22	0.28	0.44	ND	ND	0.35	0.3

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0253	R01-100830MB-0254	R01-100830MB-0255	R01-100830MB-0256			
SAMPLE LOCATION		P-41 SB-418C	P-41 SB-419A	P-41 SB-419B	P-41 SB-419C			
LABORATORY NUMBER		AB09428	AB09429	AB09430	AB09431			
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.3	11	6.6	5.5			
Barium	1,000	83	79	85	29			
Cadmium	2	ND	ND	ND	ND			
Chromium	30 (T)	14	19	21	17			
Lead	300	49	370	380	40			
PCBs								
Aroclor-1242	2	ND	ND	ND	ND			
Aroclor-1248	2	ND	ND	ND	ND			
Aroclor-1254	2	ND	ND	ND	ND			
Aroclor-1260	2	ND	1.3	0.51	ND			
Aroclor-1262	2	ND	ND	ND	ND			
Aroclor-1268	2	ND	ND	ND	ND			
TOTAL PCBs	2	ND	1.3	0.51	ND			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 3

**SUMMARY OF
LEAD FIELD SCREENING RESULTS
41 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

Sample Number	Sample Location	Sample Collection Date	XRF Lead Screening Results (mg/Kg)	EPA Laboratory Lead Confirmation Results (mg/Kg)
R01-100830MB-0655	P41 Grid 408 Floor 1'	5/19/2011	288	----
R01-100830MB-0656	P41 Grid 408 WSW 1'	5/19/2011	242	----
R01-100830MB-0657	P41 Grid 407 WSW 3'	5/19/2011	320	620
R01-100830MB-0695	P41 Grid 404 Floor 1'	5/20/2011	252	250
R01-100830MB-0662	P41 Grid 403 Floor 1'	5/23/2011	268	----
R01-100830MB-0663	P41 Grid 403 ESW 1'	5/23/2011	204.8	----
R01-100830MB-0664	P41 Grid 403 WSW 1'	5/23/2011	247	----
R01-100830MB-0665	P41 Grid 402 Floor 2'	5/23/2011	191.8	130
R01-100830MB-0666	P41 Grid 402 ESW 2'	5/23/2011	424	----
R01-100830MB-0667	P41 Grid 402 NSW 2'	5/23/2011	367	----
R01-100830MB-0668	P41 Grid 407 Floor 3' 6"	5/23/2011	28.2	----
R01-100830MB-0669	P41 Grid 409 Floor 1'	5/23/2011	485	----
R01-100830MB-0670	P41 Grid 409 WSW 1'	5/23/2011	173.8	----
R01-100830MB-0671	P41 Grid 401 Floor 2'	5/23/2011	723	----
R01-100830MB-0672	P41 Grid 401 ESW 2'	5/23/2011	124.1	----
R01-100830MB-0673	P41 Grid 401 Floor 2' 6"	5/23/2011	31.6	----
R01-100830MB-0674	P41 Grid 406 Floor 3'	5/23/2011	24.4	7.8
R01-100830MB-0675	P41 Grid 406 WSW 3'	5/23/2011	21.6	----
R01-100830MB-0676	P41 Grid 400 Floor 1'	5/23/2011	276	290
R01-100830MB-0677	P41 Grid 400 WSW 1'	5/23/2011	773	----
R01-100830MB-0690	P41 Grid 405 Floor 3'	5/25/2011	56.9	----
R01-100830MB-0691	P41 Grid 405 WSW 3'	5/25/2011	89	----
R01-100830MB-0693	P41 Grid 405 Floor 3' (2)	5/25/2011	56.9	----
R01-100830MB-0706	P41 Grid 405 Floor 3' W	5/31/2011	89	----
R01-100830MB-0707	P41 Grid 411 Floor 3' E	5/31/2011	149.3	----
R01-100830MB-0708	P41 Grid 411 NSW 3'	5/31/2011	28.4	16
R01-100830MB-0721	P41 Grid 417 Floor 1' N	5/31/2011	240	160
R01-100830MB-0714	P41 Grid 417 Floor 1' S	6/1/2011	70.6	----
R01-100830MB-0715	P41 Grid 417 Floor 2'	6/1/2011	278	----
R01-100830MB-0716	P41 Grid 411 Floor 3' W	6/1/2011	281	----
R01-100830MB-0717	P41 Grid 411 NSW 3'	6/1/2011	24.9	----
R01-100830MB-0724	P41 Grid 416 Floor 3' N	6/2/2011	47.3	----
R01-100830MB-0726	P41 Grid 416 Floor 3' S	6/2/2011	325	170

Notes:

ND = Not Detected

---- = Not analyzed

EPA Laboratory = EPA Office of Environmental Measurement and Evaluation Laboratory,
North Chelmsford, Massachusetts

mg/Kg = Milligrams per Kilogram

XRF = X-Ray Fluorescence

NSW = North Side Wall

ESW = East Side Wall

WSW = West Side Wall

N, S, E, W = Indicates that only a portion (north, south, east, or west) of the grid was sampled.

' = foot

" = inch

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TABLE 4

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0694	R01-100830MB-0695	R01-100830MB-0696	R01-100830MB-0698	R01-100830MB-0699	R01-100830MB-0720	R01-100830MB-0721
SAMPLE LOCATION		P41 Grid 407 WSW 3'	P41 Grid 404 Floor 1'	P41 Grid 402 Floor 2'	P41 Grid 406 Floor 3'	P41 Grid 400 Floor 1'	P41 Grid 411 NSW 3'	P41 Grid 417 Floor 1' N
LABORATORY NUMBER		AB18059	AB18060	AB18061	AB18062	AB18063	AB18184	AB18185
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	16	12	13	3.6	12	3.3	7.7
Barium	1,000	300	110	75	33	60	25	67
Cadmium	2	6.9	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	31	20	20	11	19	11	14
Lead	300	620	250	130	7.8	290	16	160
PCBs								
Aroclor-1016	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1221	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1232	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	0.17	0.32	ND	0.72	ND	0.16
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	0.17	0.32	ND	0.72	ND	0.16

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 4

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 41 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0726						
SAMPLE LOCATION		P41 Grid 416 Floor 3' S						
LABORATORY NUMBER		AB18186						
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	4.6						
Barium	1,000	75						
Cadmium	2	ND						
Chromium	30 (T)	13						
Lead	300	170						
PCBs								
Aroclor-1016	2	ND						
Aroclor-1221	2	ND						
Aroclor-1232	2	ND						
Aroclor-1242	2	ND						
Aroclor-1248	2	ND						
Aroclor-1254	2	ND						
Aroclor-1260	2	ND						
Aroclor-1262	2	ND						
Aroclor-1268	2	ND						
TOTAL PCBs	2	ND						

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

Appendix C

Photodocumentation Log

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PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of 41 Hoffman Avenue. Photograph taken facing south.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1138 hours
CAMERA: Samsung SL605



SCENE: View of the backyard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1139 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities in the backyard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 19 May 2011

TIME: 0937 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of glass bottles found in the excavation in the backyard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 19 May 2011

TIME: 1123 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities in the side yard at 41 Hoffman Avenue. Photograph taken facing east.

DATE: 20 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0947 hours
CAMERA: Samsung SL605



SCENE: View of excavation activities in the side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 20 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0947 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities in the side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 23 May 2011

TIME: 1148 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the ash layer beneath the driveway at 41 Hoffman Avenue. Photograph taken facing east.

DATE: 23 May 2011

TIME: 1616 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of site restoration activities in the side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 26 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 1326 hours
CAMERA: Samsung SL605



SCENE: View of site restoration activities in the side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 27 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0828 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of site restoration activities in the side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 1 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1109 hours
CAMERA: Samsung SL605



SCENE: View of excavation activities in the backyard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 1 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1109 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities in the backyard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 2 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1109 hours
CAMERA: Samsung SL605



SCENE: View of excavation activities in the backyard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 2 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 0803 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of restoration activities in the backyard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 6 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1557 hours
CAMERA: Samsung SL605



SCENE: View of restoration activities in the backyard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 8 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1557 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of new plants and fence in the backyard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 24 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1353 hours
CAMERA: Samsung SL605



SCENE: View of the restored backyard at 41 Hoffman Avenue. Photograph taken facing east.

DATE: 28 June 2011
PHOTOGRAPHER: R. Sharp

TIME: 1711 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 41 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the restored side yard at 41 Hoffman Avenue. Photograph taken facing south.

DATE: 28 June 2011

TIME: 1723 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the restored side yard at 41 Hoffman Avenue. Photograph taken facing west.

DATE: 28 June 2011

TIME: 1723 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

**REMOVAL PROGRAM
AFTER ACTION REPORT
FOR THE
TOMBARELLO SITE
LAWRENCE, ESSEX COUNTY, MASSACHUSETTS
9 MAY 2011 THROUGH 28 JUNE 2011

RESIDENTIAL PROPERTY – 51 HOFFMAN AVENUE**

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
5 Congress Street, Suite 100
Boston, MA 02109

CONTRACT NO. EP-W-05-042

TDD NO. 10-07-0008

TASK NO. 0653

DC NO. R-6935

Submitted by:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team III (START)
3 Riverside Drive
Andover, MA 01810

December 2011

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Figure 2 - Soil Boring Location Map

Figure 3 - Removal Grid Location Map

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Tables

Table 1 - Summary Table, Polycyclic Aromatic Hydrocarbons (PAHs)
in Soil Analysis

Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs)
in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs)
in Soil Analyses

Appendix C

Photodocumentation Log

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1.0 INTRODUCTION

The Weston Solutions, Inc., Superfund Technical Assessment and Response Team III (START) was tasked under Technical Direction Document (TDD) Number (No.) 01-10-07-0008 to provide technical support to U.S. Environmental Protection Agency (EPA) Region I On-Scene Coordinator (OSC) Eric Vanderboom with removal activities at the Tombarello Site, located in the Town of Lawrence, Essex County, Massachusetts (see Appendix A, Figures, Figure 1 - Site Location Map). Specifically, START conducted post-excavation soil sampling activities at several residential properties located along the periphery of the Tombarello Site, to determine whether cleanup levels had been met at the residential properties. Guardian Environmental Services, Inc. (GES), an Emergency Rapid Response Services (ERRS) contractor, was tasked to conduct soil excavation activities.

Removal activities included accessing residential properties; collecting and analyzing surface soil samples to determine the extent of contamination; removing fencing and vegetation from access ways and work areas; excavating, stockpiling, and disposing of contaminated soils; collecting post-excavation soil samples from the floor and walls of excavations; conducting additional excavation as necessary, based on analysis of post-excavation samples; conducting perimeter air monitoring; and conducting restoration activities that included backfilling excavations with clean soil, spreading grass seed, and replacing vegetation removed or damaged during the removal.

2.0 SITE DESCRIPTION

The 51 Hoffman Avenue property (the property) is an approximately 0.20-acre parcel. The property is bordered by Hoffman Avenue to the north, residential properties to the west and east, and the Tombarello Site (207 Marston Street) to the south. The property features include the residence, a paved driveway and walkways, a shed, and an aboveground pool located in the backyard (see Figure 2 - Soil Boring Location Map).

3.0 NARRATIVE CHRONOLOGY

On 31 August 2010 and 6 April 2011, EPA and WESTON START personnel accessed the property to collect surface and subsurface soil samples as part of the Tombarello Site Preliminary Assessment/Site Investigation (PA/SI). Sampling design and soil sampling activities were conducted in accordance with the EPA-approved site-specific Sampling and Analysis Plan (SAP), prepared as a separate document, entitled *Sampling and Analysis Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Site activities were also conducted in accordance with health and safety requirements outlined in the site-specific Health and Safety Plan (HASP), entitled *Health and Safety Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Sampling results from the PA/SI are presented in Appendix B, Tables, Tables 1 and 2.

On 9 May 2011 through 23 May 2011, START personnel accessed the property to collect post-excavation soil samples. The samples were field-screened to determine whether lead was present in the soil at levels above the direct exposure criteria of 300 parts per million (ppm) [equivalent to milligrams per Kilogram (mg/Kg)], as established in the *Massachusetts Department of Environmental Protection Massachusetts Contingency Plan (MCP) S-1 Standards*; and whether site-specific cleanup goals had been attained. All post-excavation sampling activities were conducted in accordance with the site-specific SAP, and with the site-specific HASP.

GES personnel cleared vegetation from the property, and excavated soil at five grids determined to contain lead at concentrations above MCP S-1 Standards (see Figure 3 - Removal Grid Location Map). All grids were excavated to a depth of 1 foot below ground surface (bgs). Soil excavation and removal activities were performed by ERRS personnel from 9 May 2011 to 8 June 2011. Air monitoring for particulates was conducted during excavation activities, and no readings above action levels were recorded.

A total of 11 post-excavation soil samples were collected and field-screened for lead during the investigation, using an X-Ray Fluorescence (XRF) instrument. Field soil screening results ranged from 43.3 mg/Kg to 311 mg/Kg. In addition, approximately 10 percent of the soil samples collected for field screening were submitted for confirmation analysis for metals (including lead) and polychlorinated biphenyls (PCBs) at the EPA Office of Environmental Measurement and Evaluation (OEME) New England Regional Laboratory (NERL) in North Chelmsford, MA. Field screening results are summarized in Table 3, and laboratory results are summarized in Table 4.

Upon completion of excavation activities, ERRS personnel performed site restoration activities, which included backfilling excavated areas, grading topsoil, and spreading grass seed, as needed.

A photodocumentation log of investigation and removal activities is included as Appendix C, Photodocumentation Log.

Appendix A

Figures

Figure 1 - Site Location Map

Figure 2 - Soil Boring Location Map

Figure 3 - Removal Grid Location Map

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Figure 1

Site Location Map

Tombarello Site
207 Marston Street
Lawrence, MA 01840

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-07-0007
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: Robert Sharp
Modified on: 6 October 2010

Data Sources:

Topos: MicroPath/USGS
 Quadrangle Name: South Groveland
 All other data: START



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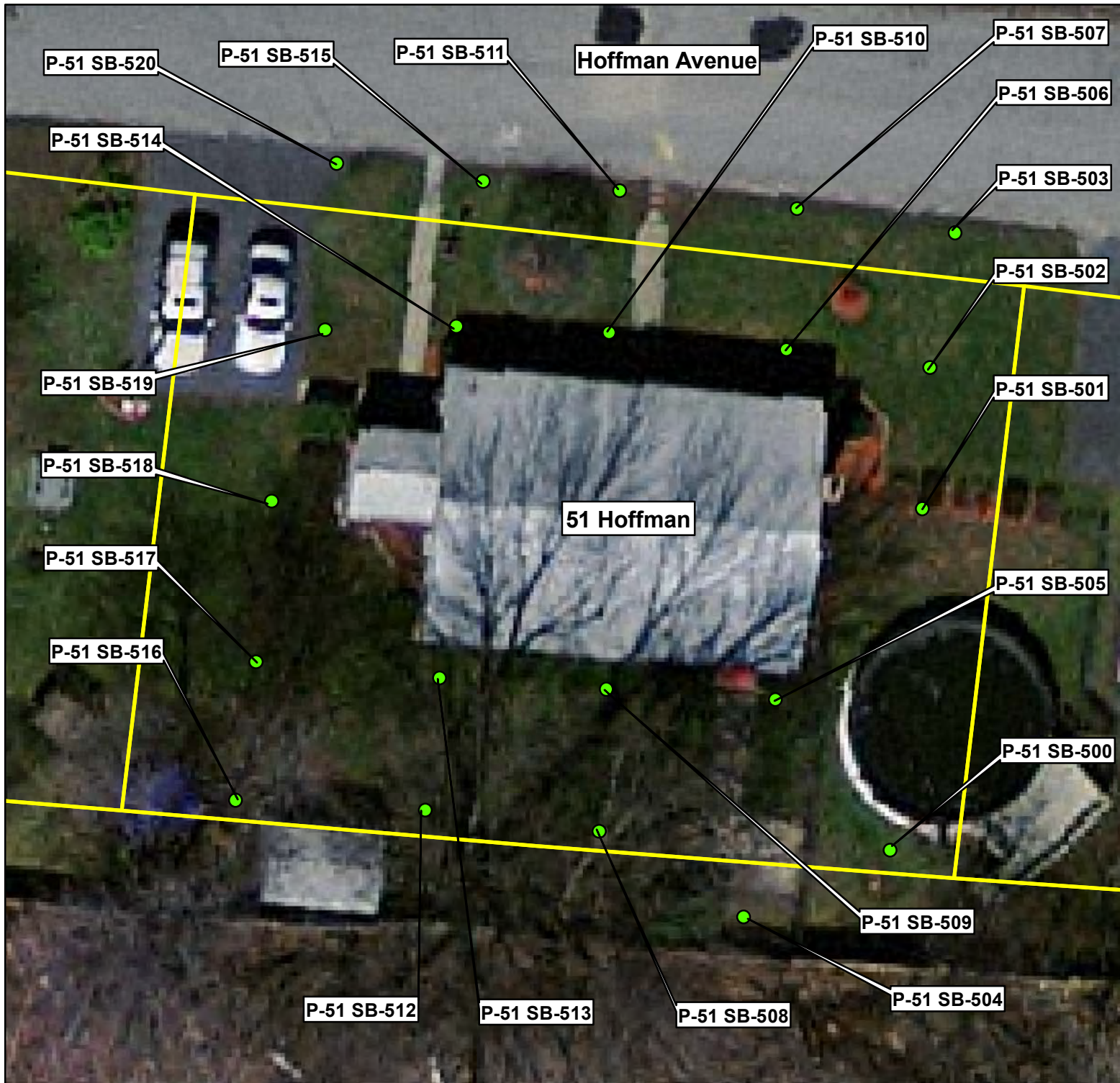




Figure 2
Soil Boring Location Map
51 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts


EPA Region I
 Superfund Technical Assessment and
 Response Team (START) III
 Contract No. EP-W-05-042

TDD Number: 10-07-0007
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2010

LEGEND

 Property Boundaries

 P-51 Soil Borings


 0 5 10 20 30 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START

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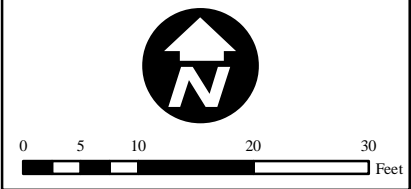
Figure 3
Removal Grid Location Map
51 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-07-0008
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2011

LEGEND

● P-51 Soil Borings
 □ Removal Grids (1 Foot)



Data Sources:
 Imagery: Mass GIS
 All other data: START

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Appendix B

Tables

Table 1 - Summary Table, Polycyclic Aromatic Hydrocarbons (PAHs) in Soil Analysis

Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0077	R01-100830MB-0078	R01-100830MB-0079	R01-100830MB-0080	R01-100830MB-0081	R01-100830MB-0082	R01-100830MB-0083
	SAMPLE LOCATION			P-51 SB-500A	P-51 SB-500B	P-51 SB-500C	P-51 SB-501A	P-51 SB-501B	P-51 SB-501C	P-51 SB-502A
	LABORATORY NUMBER			AB09272	AB09273	AB09274	AB09275	AB09276	AB09277	AB09278
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	310	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	170	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	730	ND	ND	ND	ND	ND	73
Benzo(a)anthracene	2,000	9,000	7,000	1,600	84	ND	110	ND	ND	190
Benzo(a)pyrene	2,000	7,000	2,000	1,400	99	ND	120	ND	ND	190
Benzo(b)fluoranthene	2,000	8,000	7,000	1,400	87	ND	160	63	ND	280
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	910	ND	ND	71	ND	ND	180
Benzo(k)fluoranthene	1,000	4,000	70,000	500	ND	ND	ND	ND	ND	ND
Chrysene	2,000	7,000	70,000	1,600	98	ND	130	ND	ND	210
Dibenzo(a,h)anthracene	500	1,000	700	310	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	3,400	160	ND	260	64	ND	500
Fluorene	1,000	2,000	1,000,000	320	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	890	68	ND	69	ND	ND	180
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	2,300	84	ND	120	ND	ND	210
Pyrene	4,000	20,000	1,000,000	2,600	110	ND	200	ND	ND	350

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

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** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0084	R01-100830MB-0085	R01-100830MB-0086	R01-100830MB-0087	R01-100830MB-0088	R01-100830MB-0089	R01-100830MB-0090
	SAMPLE LOCATION			P-51 SB-502B	P-51 SB-502C	P-51 SB-503A	P-51 SB-503B	P-51 SB-503C	P-51 SB-504A	P-51 SB-504B
	LABORATORY NUMBER			AB09279	AB09280	AB09281	AB09282	AB09283	AB09284	AB09285
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	ND	90	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	ND	ND	ND	ND	180	150
Benzo(a)pyrene	2,000	7,000	2,000	ND	ND	ND	ND	ND	150	150
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	ND	ND	ND	ND	190	160
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	ND	ND	ND	130	94
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	ND	ND	ND	110	ND
Chrysene	2,000	7,000	70,000	ND	ND	ND	ND	ND	240	180
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	74	ND	120	110	ND	420	340
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	ND	ND	ND	ND	150	120
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	ND	ND	ND	ND	190	150
Pyrene	4,000	20,000	1,000,000	ND	ND	80	70	ND	370	230

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0091	R01-100830MB-0092	R01-100830MB-0093	R01-100830MB-0094	R01-100830MB-0095	R01-100830MB-0096	R01-100830MB-0097
	SAMPLE LOCATION			P-51 SB-504C	P-51 SB-505A	P-51 SB-505B	P-51 SB-505C	P-51 SB-506A	P-51 SB-506B	P-51 SB-506C
	LABORATORY NUMBER			AB09286	AB09287	AB09288	AB09289	AB09290	AB09291	AB09292
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	71	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	67	ND	ND	100	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	140	100	ND	570	ND	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	160	78	ND	580	ND	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	140	150	73	470	ND	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	130	76	ND	350	ND	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	65	ND	ND	230	ND	ND
Chrysene	2,000	7,000	70,000	ND	200	140	ND	680	ND	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	ND	400	240	150	1,400	ND	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	120	76	ND	360	ND	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	200	110	73	560	ND	ND
Pyrene	4,000	20,000	1,000,000	ND	260	160	110	1,000	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0098	R01-100830MB-0099	R01-100830MB-0100	R01-100830MB-0101	R01-100830MB-0102	R01-100830MB-0103	R01-100830MB-0104
	SAMPLE LOCATION			P-51 SB-507A	P-51 SB-507B	P-51 SB-507C	P-51 SB-508A	P-51 SB-508B	P-51 SB-508C	P-51 SB-509A
	LABORATORY NUMBER			AB09293	AB09294	AB09295	AB09296	AB09297	AB09298	AB09299
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	170	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	110	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	620	130	120	ND
Benzo(a)anthracene	2,000	9,000	7,000	79	ND	ND	2,500	550	360	ND
Benzo(a)pyrene	2,000	7,000	2,000	77	ND	ND	1,700	570	370	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	100	ND	ND	2,100	430	330	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	ND	1,400	380	240	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	86	ND	ND	1,900	470	340	ND
Chrysene	2,000	7,000	70,000	93	ND	ND	2,200	490	370	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	480	110	67	ND
Fluoranthene	4,000	10,000	1,000,000	180	ND	ND	4,400	920	760	77
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	210	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	71	ND	ND	1,400	370	240	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	130	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	73	ND	ND	2,400	480	490	ND
Pyrene	4,000	20,000	1,000,000	150	ND	ND	4,100	820	670	67

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0105	R01-100830MB-0106	R01-100830MB-0107	R01-100830MB-0108	R01-100830MB-0109	R01-100830MB-0110	R01-100830MB-0111
	SAMPLE LOCATION			P-51 SB-509B	P-51 SB-509C	P-51 SB-510A	P-51 SB-510B	P-51 SB-510C	P-51 SB-511A	P-51 SB-511B
	LABORATORY NUMBER			AB09300	AB09301	AB09302	AB09303	AB09304	AB09305	AB09306
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	ND	140	ND	ND	230	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	ND	160	ND	ND	220	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	ND	150	ND	ND	250	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	100	ND	ND	160	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	140	ND	ND	210	ND
Chrysene	2,000	7,000	70,000	ND	ND	140	ND	ND	250	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	ND	ND	240	ND	ND	510	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	ND	91	ND	ND	140	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	ND	110	ND	ND	240	ND
Pyrene	4,000	20,000	1,000,000	ND	ND	250	ND	ND	460	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0112	R01-100830MB-0113	R01-100830MB-0114	R01-100830MB-0115	R01-100830MB-0116	R01-100830MB-0117	R01-100830MB-0118
	SAMPLE LOCATION			P-51 SB-511C	P-51 SB-512A	P-51 SB-512B	P-51 SB-512C	P-51 SB-513A	P-51 SB-513B	P-51 SB-513C
	LABORATORY NUMBER			AB09307	AB09308	AB09309	AB09310	AB09311	AB09312	AB09313
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	99	ND	ND	91	ND	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	100	ND	ND	97	ND	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	120	ND	ND	110	ND	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	72	ND	ND	80	ND	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	91	ND	ND	77	ND	ND
Chrysene	2,000	7,000	70,000	ND	110	ND	ND	120	71	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	ND	160	ND	ND	170	88	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	72	ND	ND	68	ND	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	71	ND	ND	77	85	ND
Pyrene	4,000	20,000	1,000,000	ND	160	ND	ND	160	77	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0119	R01-100830MB-0120	R01-100830MB-0121	R01-100830MB-0122	R01-100830MB-0123	R01-100830MB-0124	R01-100830MB-0125
	SAMPLE LOCATION			P-51 SB-514A	P-51 SB-514B	P-51 SB-514C	P-51 SB-515A	P-51 SB-515B	P-51 SB-515C	P-51 SB-516A
	LABORATORY NUMBER			AB09314	AB09315	AB09316	AB09317	AB09318	AB09319	AB09320
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	74
Anthracene	1,000	4,000	1,000,000	100	ND	ND	ND	ND	ND	110
Benzo(a)anthracene	2,000	9,000	7,000	630	ND	ND	64	160	ND	670
Benzo(a)pyrene	2,000	7,000	2,000	550	ND	ND	ND	110	ND	670
Benzo(b)fluoranthene	2,000	8,000	7,000	540	ND	ND	ND	130	ND	760
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	350	ND	ND	ND	90	ND	460
Benzo(k)fluoranthene	1,000	4,000	70,000	440	ND	ND	ND	100	ND	680
Chrysene	2,000	7,000	70,000	570	ND	ND	60	130	ND	740
Dibenzo(a,h)anthracene	500	1,000	700	72	ND	ND	ND	ND	ND	170
Fluoranthene	4,000	10,000	1,000,000	1,300	ND	ND	110	330	ND	1,300
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	310	ND	ND	ND	83	ND	510
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	700	ND	ND	63	110	ND	600
Pyrene	4,000	20,000	1,000,000	1,200	ND	ND	100	250	ND	1,300

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0126	R01-100830MB-0127	R01-100830MB-0128	R01-100830MB-0129	R01-100830MB-0130	R01-100830MB-0131	R01-100830MB-0132
	SAMPLE LOCATION			P-51 SB-516B	P-51 SB-516C	P-51 SB-517A	P-51 SB-517B	P-51 SB-517C	P-51 SB-518A	P-51 SB-518B
	LABORATORY NUMBER			AB09321	AB09322	AB09323	AB09324	AB09325	AB09326	AB09327
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	83	ND	92	ND	130	170	ND
Benzo(a)pyrene	2,000	7,000	2,000	97	ND	110	ND	110	180	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	120	65	110	ND	120	130	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	98	ND	91	ND	67	110	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	120	ND	110	ND	120	220	ND
Chrysene	2,000	7,000	70,000	95	78	97	ND	140	220	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	160	100	180	ND	320	430	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	93	ND	71	ND	60	100	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	73	ND	82	ND	130	160	ND
Pyrene	4,000	20,000	1,000,000	140	87	150	ND	230	330	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0133	R01-100830MB-0134	R01-100830MB-0135	R01-100830MB-0136	R01-100830MB-0137	R01-100830MB-0138	R01-100830MB-0139
	SAMPLE LOCATION			P-51 SB-518C	P-51 SB-519A	P-51 SB-519B	P-51 SB-519C	P-51 SB-520A	P-51 SB-520B	P-51 SB-520C
	LABORATORY NUMBER			AB09328	AB09329	AB09330	AB09331	AB09332	AB09333	AB09334
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	67	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	110	ND	ND	230	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	690	ND	ND	560	250	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	620	ND	ND	480	210	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	730	ND	ND	380	210	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	510	ND	ND	300	140	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	730	ND	ND	400	180	ND
Chrysene	2,000	7,000	70,000	ND	730	ND	ND	540	300	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	86	ND	ND	70	64	ND
Fluoranthene	4,000	10,000	1,000,000	ND	1,600	ND	ND	1,200	530	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	99	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	460	ND	ND	290	130	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	740	ND	ND	880	290	ND
Pyrene	4,000	20,000	1,000,000	ND	1,400	ND	ND	900	480	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0140	R01-100830MB-0141	R01-100830MB-0142			
	SAMPLE LOCATION			P-51 SB-521A	P-51 SB-521B	P-51 SB-521C			
	LABORATORY NUMBER			AB09335	AB09336	AB09337			
	Background*	Background with Fill**	S-1 & GW-2						
Acenaphthene	500	2,000	1,000,000	320	ND	ND			
Acenaphthylene	500	1,000	600,000	ND	ND	ND			
Anthracene	1,000	4,000	1,000,000	830	ND	ND			
Benzo(a)anthracene	2,000	9,000	7,000	2,100	83	ND			
Benzo(a)pyrene	2,000	7,000	2,000	1,800	89	ND			
Benzo(b)fluoranthene	2,000	8,000	7,000	1,500	82	ND			
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	1,100	72	ND			
Benzo(k)fluoranthene	1,000	4,000	70,000	1,400	76	ND			
Chrysene	2,000	7,000	70,000	2,000	91	ND			
Dibenzo(a,h)anthracene	500	1,000	700	270	ND	ND			
Fluoranthene	4,000	10,000	1,000,000	4,000	150	65			
Fluorene	1,000	2,000	1,000,000	280	ND	ND			
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	1,100	67	ND			
Naphthalene	500	1,000	40,000	220	ND	ND			
Phenanthrene	3,000	20,000	500,000	2,800	79	ND			
Pyrene	4,000	20,000	1,000,000	3,400	140	ND			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0077	R01-100830MB-0078	R01-100830MB-0079	R01-100830MB-0080	R01-100830MB-0081	R01-100830MB-0082	R01-100830MB-0083
SAMPLE LOCATION		P-51 SB-500A	P-51 SB-500B	P-51 SB-500C	P-51 SB-501A	P-51 SB-501B	P-51 SB-501C	P-51 SB-502A
LABORATORY NUMBER		AB09272	AB09273	AB09274	AB09275	AB09276	AB09277	AB09278
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	11	6.3	6.6	13	10	6.7	11
Barium	1,000	70	27	22	39	31	23	39
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	30	16	15	15	16	15	17
Lead	300	110	17	8.4	49	21	10	62
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.5	ND	ND	0.18	ND	ND	0.48
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.5	ND	ND	0.18	ND	ND	0.48

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0084	R01-100830MB-0085	R01-100830MB-0086	R01-100830MB-0087	R01-100830MB-0088	R01-100830MB-0089	R01-100830MB-0090
SAMPLE LOCATION		P-51 SB-502B	P-51 SB-502C	P-51 SB-503A	P-51 SB-503B	P-51 SB-503C	P-51 SB-504A	P-51 SB-504B
LABORATORY NUMBER		AB09279	AB09280	AB09281	AB09282	AB09283	AB09284	AB09285
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	8.1	7.7	9.2	8.2	7.7	11	9.3
Barium	1,000	30	25	41	36	25	58	41
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	14	17	15	15	18	19	18
Lead	300	15	8.6	50	20	12	88	48
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	ND	0.23	ND	1.41	1.05
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	ND	0.23	ND	1.41	1.05

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0091	R01-100830MB-0092	R01-100830MB-0093	R01-100830MB-0094	R01-100830MB-0095	R01-100830MB-0096	R01-100830MB-0097
SAMPLE LOCATION		P-51 SB-504C	P-51 SB-505A	P-51 SB-505B	P-51 SB-505C	P-51 SB-506A	P-51 SB-506B	P-51 SB-506C
LABORATORY NUMBER		AB09286	AB09287	AB09288	AB09289	AB09290	AB09291	AB09292
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7	9.8	13	11	9.8	6.9	6.5
Barium	1,000	25	51	41	40	41	27	31
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	14	23	16	17	18	13	15
Lead	300	8.4	71	57	47	110	11	13
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.297	ND	0.15	ND	0.25	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.297	ND	0.15	ND	0.25	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0098	R01-100830MB-0099	R01-100830MB-0100	R01-100830MB-0101	R01-100830MB-0102	R01-100830MB-0103	R01-100830MB-0104
SAMPLE LOCATION		P-51 SB-507A	P-51 SB-507B	P-51 SB-507C	P-51 SB-508A	P-51 SB-508B	P-51 SB-508C	P-51 SB-509A
LABORATORY NUMBER		AB09293	AB09294	AB09295	AB09296	AB09297	AB09298	AB09299
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	13	4.9	5.6	14	6.7	6.3	6.7
Barium	1,000	40	30	28	82	37	25	38
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	16	14	16	35	24	16	20
Lead	300	61	12	8	160	37	16	24
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.34	ND	ND	2.2	0.7	0.3	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.34	ND	ND	2.2	0.7	0.3	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0105	R01-100830MB-0106	R01-100830MB-0107	R01-100830MB-0108	R01-100830MB-0109	R01-100830MB-0110	R01-100830MB-0111
SAMPLE LOCATION		P-51 SB-509B	P-51 SB-509C	P-51 SB-510A	P-51 SB-510B	P-51 SB-510C	P-51 SB-511A	P-51 SB-511B
LABORATORY NUMBER		AB09300	AB09301	AB09302	AB09303	AB09304	AB09305	AB09306
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.7	6.6	9.1	6.3	7.1	7.6	6.7
Barium	1,000	29	25	49	32	27	41	28
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	14	15	20	15	14	15	15
Lead	300	9.6	8.7	67	16	17	68	18
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	0.39	ND	ND	0.2	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	0.39	ND	ND	0.2	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0112	R01-100830MB-0113	R01-100830MB-0114	R01-100830MB-0115	R01-100830MB-0116	R01-100830MB-0117	R01-100830MB-0118
SAMPLE LOCATION		P-51 SB-511C	P-51 SB-512A	P-51 SB-512B	P-51 SB-512C	P-51 SB-513A	P-51 SB-513B	P-51 SB-513C
LABORATORY NUMBER		AB09307	AB09308	AB09309	AB09310	AB09311	AB09312	AB09313
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	5.6	9.1	7.1	6.1	7.4	8.8	5.4
Barium	1,000	23	37	24	21	33	26	21
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	15	17	15	15	16	15	14
Lead	300	7.5	48	9	7.3	23	19	8.8
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	0.63	ND	ND	ND	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	0.63	ND	ND	ND	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

**SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

SAMPLE NUMBER		R01-100830MB-0119	R01-100830MB-0120	R01-100830MB-0121	R01-100830MB-0122	R01-100830MB-0123	R01-100830MB-0124	R01-100830MB-0125
SAMPLE LOCATION		P-51 SB-514A	P-51 SB-514B	P-51 SB-514C	P-51 SB-515A	P-51 SB-515B	P-51 SB-515C	P-51 SB-516A
LABORATORY NUMBER		AB09314	AB09315	AB09316	AB09317	AB09318	AB09319	AB09320
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	9.2	6.2	6.9	6.4	8.7	6	14
Barium	1,000	48	26	25	30	29	26	85
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	18	13	16	12	14	16	27
Lead	300	84	7.8	11	29	19	20	210
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.24	ND	ND	ND	ND	ND	3.7
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.24	ND	ND	ND	ND	ND	3.7

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0126	R01-100830MB-0127	R01-100830MB-0128	R01-100830MB-0129	R01-100830MB-0130	R01-100830MB-0131	R01-100830MB-0132
SAMPLE LOCATION		P-51 SB-516B	P-51 SB-516C	P-51 SB-517A	P-51 SB-517B	P-51 SB-517C	P-51 SB-518A	P-51 SB-518B
LABORATORY NUMBER		AB09321	AB09322	AB09323	AB09324	AB09325	AB09326	AB09327
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.3	6.8	9.5	6.5	7.8	9.7	6.8
Barium	1,000	29	30	39	23	31	49	24
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	16	17	17	15	16	24	15
Lead	300	31	27	87	7.8	32	71	11
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	1.1	0.7	0.36	ND	ND	0.33	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	1.1	0.7	0.36	ND	ND	0.33	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0133	R01-100830MB-0134	R01-100830MB-0135	R01-100830MB-0136	R01-100830MB-0137	R01-100830MB-0138	R01-100830MB-0139
SAMPLE LOCATION		P-51 SB-518C	P-51 SB-519A	P-51 SB-519B	P-51 SB-519C	P-51 SB-520A	P-51 SB-520B	P-51 SB-520C
LABORATORY NUMBER		AB09328	AB09329	AB09330	AB09331	AB09332	AB09333	AB09334
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7	10	5.7	6.4	7.6	8.1	8.6
Barium	1,000	26	48	26	25	38	39	38
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	16	17	14	12	16	14	18
Lead	300	27	91	8.3	7	43	25	30
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	0.62	ND	ND	ND	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	0.62	ND	ND	ND	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 2

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0140	R01-100830MB-0141	R01-100830MB-0142			
SAMPLE LOCATION		P-51 SB-521A	P-51 SB-521B	P-51 SB-521C			
LABORATORY NUMBER		AB09335	AB09336	AB09337			
ANALYTES	S-1 & GW-2						
METALS							
Arsenic	20	12	6.8	6.8			
Barium	1,000	74	27	21			
Cadmium	2	ND	ND	ND			
Chromium	30 (T)	29	16	15			
Lead	300	120	16	8.2			
PCBs							
Aroclor-1242	2	ND	ND	ND			
Aroclor-1248	2	ND	ND	ND			
Aroclor-1254	2	ND	ND	ND			
Aroclor-1260	2	0.49	ND	ND			
Aroclor-1262	2	ND	ND	ND			
Aroclor-1268	2	ND	ND	ND			
TOTAL PCBs	2	0.49	ND	ND			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

TABLE 3

**SUMMARY OF
LEAD FIELD SCREENING RESULTS
51 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

Sample Number	Sample Location	Sample Collection Date	XRF Lead Screening Results (mg/Kg)	EPA Laboratory Lead Confirmation Results (mg/Kg)
R01-100830MB-0646	P51 Grid 500 Floor 1'	5/17/2011	84	----
R01-100830MB-0647	P51 Grid 500 NSW 1'	5/17/2011	88.3	----
R01-100830MB-0648	P51 Grid 504 Floor 1'	5/17/2011	64	----
R01-100830MB-0649	P51 Grid 504 NSW 1'	5/17/2011	106.6	81
R01-100830MB-0650	P51 Grid 508 Floor 1'	5/18/2011	43.3	26
R01-100830MB-0651	P51 Grid 508 NSW 1'	5/18/2011	105.7	----
R01-100830MB-0652	P51 Grid 512 Floor 1'	5/18/2011	47.1	----
R01-100830MB-0653	P51 Grid 512 NSW 1'	5/18/2011	181.8	150
R01-100830MB-0654	P51 Grid 512 Stump Area	5/18/2011	131.3	----
R01-100830MB-0678	P51 Grid 516 Floor 1'	5/23/2011	306	----
R01-100830MB-0679	P51 Grid 516 NSW 1'	5/23/2011	311	74

Notes:

ND = Not Detected

---- = Not analyzed

EPA Laboratory = EPA Office of Environmental Measurement and Evaluation Laboratory,
North Chelmsford, Massachusetts

mg/Kg = Milligrams per Kilogram

XRF = X-Ray Fluorescence

NSW = North Side Wall

ESW = East Side Wall

WSW = West Side Wall

' = foot

TABLE 4

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 51 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0659	R01-100830MB-0660	R01-100830MB-0661	R01-100830MB-0700			
SAMPLE LOCATION		P51 Grid 512 NSW 1'	P51 Grid 508 Floor 1'	P51 Grid 504 NSW 1'	P51 Grid 516 NSW 1'			
LABORATORY NUMBER		AB17803	AB17804	AB17805	AB17864			
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	13	7.8	13	11			
Barium	1,000	57	38	53	40			
Cadmium	2	ND	ND	ND	ND			
Chromium	30 (T)	21	16	18	16			
Lead	300	150	26	81	74			
PCBs								
Aroclor-1242	2	ND	ND	ND	ND			
Aroclor-1248	2	ND	ND	ND	ND			
Aroclor-1254	2	ND	ND	ND	ND			
Aroclor-1260	2	1.4	0.46	1.2	1			
Aroclor-1262	2	ND	ND	ND	ND			
Aroclor-1268	2	ND	ND	ND	ND			
TOTAL PCBs	2	1.40	0.46	1.20	1.00			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

Appendix C

Photodocumentation Log

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PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of 51 Hoffman Avenue. Photograph taken facing southeast.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1137 hours
CAMERA: Samsung SL605



SCENE: View of the western portion of the yard at 51 Hoffman Avenue. Photograph taken facing south.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1137 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the backyard at 51 Hoffman Avenue. Photograph taken facing east.

DATE: 3 September 2010
PHOTOGRAPHER: R. Sharp

TIME: 1138 hours
CAMERA: Samsung SL605



SCENE: View of excavation activities in the backyard at 51 Hoffman Avenue. Photograph taken facing west.

DATE: 18 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0858 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities around the pool in the backyard at 51 Hoffman Avenue. Photograph taken facing west.

DATE: 17 May 2011

PHOTOGRAPHER: R. Sharp

TIME: 0851 hours

CAMERA: Samsung SL605



SCENE: View of excavation activities around the shed in the backyard at 51 Hoffman Avenue. Photograph taken facing south.

DATE: 18 May 2011

PHOTOGRAPHER: R. Sharp

TIME: 1032 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the Emergency Rapid Response Services (ERRS) crew moving shed in the backyard at 51 Hoffman Avenue. Photograph taken facing west.

DATE: 8 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1012 hours

CAMERA: Samsung SL605



SCENE: View of the ERRS crew placing topsoil in the backyard at 51 Hoffman Avenue. Photograph taken facing east.

DATE: 8 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1037 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the new concrete patio in the backyard at 51 Hoffman Avenue. Photograph taken facing south.

DATE: 10 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 0959 hours

CAMERA: Samsung SL605



SCENE: View of the restored backyard at 51 Hoffman Avenue. Photograph taken facing east.

DATE: 28 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 0945 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 51 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the restored backyard at 51 Hoffman Avenue. Photograph taken facing west.

DATE: 28 June 2011

TIME: 1803 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the restored backyard at 51 Hoffman Avenue. Photograph taken facing east.

DATE: 28 June 2011

TIME: 1802 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

**REMOVAL PROGRAM
AFTER ACTION REPORT
FOR THE
TOMBARELLO SITE
LAWRENCE, ESSEX COUNTY, MASSACHUSETTS
9 MAY 2011 THROUGH 28 JUNE 2011

RESIDENTIAL PROPERTY – 53 HOFFMAN AVENUE**

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
5 Congress Street, Suite 100
Boston, Massachusetts 02109

CONTRACT NO. EP-W-05-042

TDD NO. 10-07-0008

TASK NO. 0653

DC NO. R-6936

Submitted by:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team III (START)
3 Riverside Drive
Andover, MA 01810

December 2011

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Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Appendix C

Photodocumentation Log

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1.0 INTRODUCTION

The Weston Solutions, Inc., Superfund Technical Assessment and Response Team III (START) was tasked under Technical Direction Document (TDD) Number (No.) 01-10-07-0008 to provide technical support to U.S. Environmental Protection Agency (EPA) Region I On-Scene Coordinator (OSC) Eric Vanderboom with removal activities at the Tombarello Site, located in the Town of Lawrence, Essex County, Massachusetts (see Appendix A, Figures, Figure 1 - Site Location Map). Specifically, START conducted post-excavation soil sampling activities at several residential properties located along the periphery of the Tombarello Site, to determine whether cleanup levels had been met at the residential properties. Guardian Environmental Services, Inc. (GES), an Emergency Rapid Response Services (ERRS) contractor, was tasked to conduct soil excavation activities.

Removal activities included accessing residential properties; collecting and analyzing soil samples to determine the extent of contamination; removing fencing and vegetation from access ways and work areas; excavating, stockpiling, and disposing of contaminated soils; collecting post-excavation soil samples from the floor and walls of excavations; conducting additional excavation as necessary, based on analysis of post-excavation samples; conducting perimeter air monitoring; and conducting restoration activities that included backfilling excavations with clean soil, spreading grass seed, and replacing vegetation removed or damaged during the removal.

2.0 SITE DESCRIPTION

The 53 Hoffman Avenue property (the property) is an approximately 0.20-acre parcel. The property is bordered by Hoffman Avenue to the north, residential properties to the west, Interstate 495 to the east, and the Tombarello Site (207 Marston Street) to the south. The property features include the residence, a paved driveway and walkways, and an aboveground pool located in the backyard (see Figure 2 - Soil Boring Location Map).

3.0 NARRATIVE CHRONOLOGY

On 30 August 2010, EPA and WESTON START personnel accessed the property to collect surface and subsurface soil samples as part of the Tombarello Site Preliminary Assessment/Site Investigation (PA/SI). Sampling design and soil sampling activities were conducted in accordance with the EPA-approved site-specific Sampling and Analysis Plan (SAP), prepared as a separate document, entitled *Sampling and Analysis Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Site activities were also conducted in accordance with health and safety requirements outlined in the site-specific Health and Safety Plan (HASP), entitled *Health and Safety Plan for the Tombarello Site, Lawrence, Essex County, Massachusetts*, dated August 2010. Sampling results from the PA/SI are presented in Appendix B, Tables, Tables 1 and 2.

On 12 May 2011 through 16 May 2011, START personnel accessed the property to collect post-excavation soil samples. The samples were field-screened to determine whether lead was present in the soil at levels above the direct exposure criteria of 300 parts per million (ppm) [equivalent to milligrams per Kilogram (mg/Kg)], as established in the *Massachusetts Department of Environmental Protection Massachusetts Contingency Plan (MCP) S-1 Standards*; and whether site-specific cleanup goals had been attained. All post-excavation sampling activities were conducted in accordance with the site-specific SAP, and with the site-specific HASP.

GES personnel cleared vegetation from the property, and excavated soil at eight grids determined to contain lead at concentrations above MCP S-1 Standards (see Figure 3 - Removal Grid Location Map). All grids were excavated to a depth of 1 foot below ground surface (bgs). Soil excavation and removal activities were performed by ERRS personnel from 10 May 2011 to 3 June 2011. Air monitoring for particulates was conducted during excavation activities, and no readings above action levels were recorded.

A total of 17 post-excavation soil samples were collected and field-screened for lead during the investigation, using an X-Ray Fluorescence (XRF) instrument. Field soil screening results ranged from 26.9 mg/Kg to 461 mg/Kg. In addition, approximately 10 percent of the soil samples collected for field screening were submitted for confirmation analysis for metals (including lead) and polychlorinated biphenyls (PCBs) at the EPA Office of Environmental Measurement and Evaluation (OEME) New England Regional Laboratory (NERL) in North Chelmsford, MA. Field screening results are included in Table 3, and laboratory results are included in Table 4.

Upon completion of excavation activities, ERRS personnel performed site restoration activities, which included backfilling excavated areas, grading topsoil, and spreading grass seed, as needed.

A photodocumentation log of investigation and removal activities is included as Appendix C, Photodocumentation Log.

Appendix A

Figures

Figure 1 - Site Location Map

Figure 2 - Soil Boring Location Map

Figure 3 - Removal Grid Location Map

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Figure 1

Site Location Map

**Tombarello Site
207 Marston Street
Lawrence, MA 01840**

**EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042**

TDD Number: 10-07-0007
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: Robert Sharp
Modified on: 6 October 2010

Data Sources:

Topos: MicroPath/USGS
Quadrangle Name: South Groveland
All other data: START



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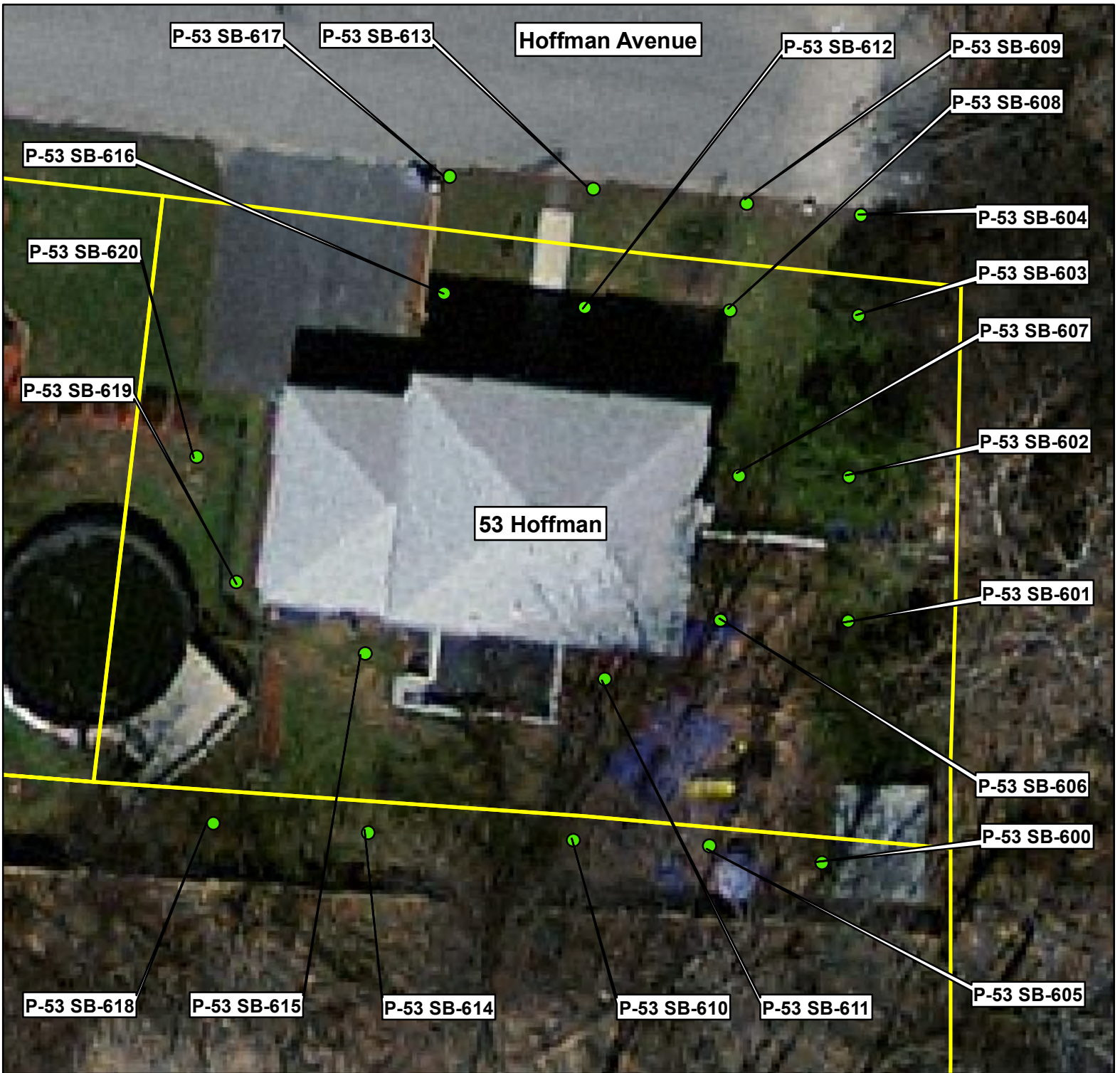


Figure 2
Soil Boring Location Map
53 Hoffman Avenue
Tombarello Site
207 Marston Street
Lawrence, Massachusetts



EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-07-0007
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: R. Sharp
 Modified on: 25 October 2010

LEGEND

● P-53 Soil Borings

▭ Property Boundaries

Data Sources:
 Imagery: Mass GIS
 All other data: START



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Hoffman Avenue

53 Hoffman

P-53 Grid 606

P-53 Grid 601

P-53 Grid 611

P-53 Grid 600

P-53 Grid 618

P-53 Grid 614

P-53 Grid 610



P-53 Grid 605

Figure 3
Removal Grid Location Map
53 Hoffman Avenue

Tombarello Site
207 Marston Street
Lawrence, Massachusetts

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042
TDD Number: 10-07-0008
Created by: Robert Sharp
Created on: 11 August 2010
Modified by: R. Sharp
Modified on: 25 October 2011

LEGEND

-  P-53 Soil Borings
-  Removal Grids (1 Foot)



Data Sources:
Imagery: Mass GIS
All other data: START



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Appendix B

Tables

Table 1 - Summary Table, Polycyclic Aromatic Hydrocarbons (PAHs) in Soil Analysis

Table 2 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

Table 3 - Summary of Lead Field Screening Results

Table 4 - Summary Table, Metals and Polychlorinated Biphenyls (PCBs) in Soil Analyses

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0001	R01-100830MB-0002	R01-100830MB-0003	R01-100830MB-0004	R01-100830MB-0005	R01-100830MB-0006	R01-100830MB-0007
	SAMPLE LOCATION			P-53 SB-600A	P-53 SB-600B	P-53 SB-600C	P-53 SB-601A	P-53 SB-601B	P-53 SB-601C	P-53 SB-602A
	LABORATORY NUMBER			AB09183	AB09184	AB09185	AB09186	AB09187	AB09188	AB09189
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	1,200	ND	170	480	ND	500	ND
Acenaphthylene	500	1,000	600,000	ND	ND	160	310	ND	73	ND
Anthracene	1,000	4,000	1,000,000	2,200	ND	170	2,200	100	1,600	110
Benzo(a)anthracene	2,000	9,000	7,000	5,000	ND	170	4,300	300	2,400	230
Benzo(a)pyrene	2,000	7,000	2,000	3,300	ND	140	3,300	260	1,400	210
Benzo(b)fluoranthene	2,000	8,000	7,000	3,400	ND	140	2,900	230	1,000	180
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	2,500	ND	150	2,000	210	700	150
Benzo(k)fluoranthene	1,000	4,000	70,000	1,900	ND	130	1,300	130	660	120
Chrysene	2,000	7,000	70,000	5,200	ND	220	3,300	360	1,800	290
Dibenzo(a,h)anthracene	500	1,000	700	1,100	ND	150	550	62	210	62
Fluoranthene	4,000	10,000	1,000,000	12,000	ND	200	11,000	670	6,300	490
Fluorene	1,000	2,000	1,000,000	1,400	ND	160	720	ND	660	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	2,500	ND	140	2,000	230	840	160
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	120	ND
Phenanthrene	3,000	20,000	500,000	11,000	ND	190	7,700	300	5,900	290
Pyrene	4,000	20,000	1,000,000	10,000	ND	180	8,400	550	4,300	380

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0008	R01-100830MB-0009	R01-100830MB-0010	R01-100830MB-0011	R01-100830MB-0012	R01-100830MB-0013	R01-100830MB-0014
	SAMPLE LOCATION			P-53 SB-602B	P-53 SB-602C	P-53 SB-603A	P-53 SB-603B	P-53 SB-603C	P-53 SB-604A	P-53 SB-604B
	LABORATORY NUMBER			AB09190	AB09191	AB09192	AB09193	AB09194	AB09195	AB09196
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	85	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	73	ND	ND	130	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	ND	190	ND	ND	350	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	ND	180	ND	ND	310	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	ND	180	ND	ND	320	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	130	ND	ND	240	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	96	ND	ND	150	ND
Chrysene	2,000	7,000	70,000	ND	ND	290	ND	ND	410	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	70	ND	410	56	ND	780	94
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	ND	150	ND	ND	230	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	ND	170	ND	ND	320	54
Pyrene	4,000	20,000	1,000,000	ND	ND	340	ND	ND	620	80

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0015	R01-100830MB-0016	R01-100830MB-0017	R01-100830MB-0018	R01-100830MB-0019	R01-100830MB-0020	R01-100830MB-0021
	SAMPLE LOCATION			P-53 SB-604C	P-53 SB-605A	P-53 SB-605B	P-53 SB-605C	P-53 SB-606A	P-53 SB-606B	P-53 SB-606C
	LABORATORY NUMBER			AB09197	AB09198	AB09199	AB09200	AB09201	AB09202	AB09203
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	230	ND	ND	150	47	ND
Acenaphthylene	500	1,000	600,000	ND	280	ND	ND	350	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	1,000	ND	69	820	140	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	2,800	110	200	1,500	330	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	1,300	91	140	740	240	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	1,700	90	ND	980	210	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	1,100	74	93	730	160	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	880	ND	ND	500	110	ND
Chrysene	2,000	7,000	70,000	ND	2,300	160	260	1,300	330	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	310	ND	ND	140	52	ND
Fluoranthene	4,000	10,000	1,000,000	ND	5,800	220	400	3,300	790	ND
Fluorene	1,000	2,000	1,000,000	ND	240	ND	ND	270	50	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	1,300	81	110	880	180	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	2,700	80	210	2,300	510	ND
Pyrene	4,000	20,000	1,000,000	ND	4,600	160	300	2,500	560	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0022	R01-100830MB-0023	R01-100830MB-0024	R01-100830MB-0025	R01-100830MB-0026	R01-100830MB-0027	R01-100830MB-0028
	SAMPLE LOCATION			P-53 SB-607A	P-53 SB-607B	P-53 SB-607C	P-53 SB-608A	P-53 SB-608B	P-53 SB-608C	P-53 SB-609A
	LABORATORY NUMBER			AB09204	AB091205	AB09206	AB09207	AB091208	AB091209	AB09210
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	130	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	490	ND	ND	330	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	990	ND	ND	370	ND	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	3,500	160	ND	780	ND	ND	94
Benzo(a)pyrene	2,000	7,000	2,000	2,700	140	ND	690	ND	ND	88
Benzo(b)fluoranthene	2,000	8,000	7,000	2,000	110	ND	540	ND	ND	96
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	1,600	83	ND	380	ND	ND	65
Benzo(k)fluoranthene	1,000	4,000	70,000	1,100	64	ND	280	ND	ND	ND
Chrysene	2,000	7,000	70,000	2,700	210	ND	740	ND	ND	ND
Dibenzo(a,h)anthracene	500	1,000	700	370	ND	ND	100	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	7,100	280	ND	1,500	ND	ND	180
Fluorene	1,000	2,000	1,000,000	180	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	1,700	88	ND	430	ND	ND	69
Naphthalene	500	1,000	40,000	130	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	2,400	100	ND	260	ND	ND	88
Pyrene	4,000	20,000	1,000,000	6,000	240	ND	1,500	ND	ND	160

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

MCP = Massachusetts Contingency Plan

MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0029	R01-100830MB-0030	R01-100830MB-0031	R01-100830MB-0032	R01-100830MB-0033	R01-100830MB-0034	R01-100830MB-0035
	SAMPLE LOCATION			P-53 SB-609B	P-53 SB-609C	P-53 SB-610A	P-53 SB-610B	P-53 SB-610C	P-53 SB-611A	P-53 SB-611B
	LABORATORY NUMBER			AB09211	AB09212	AB09213	AB09214	AB09215	AB09216	AB09217
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	ND	ND	ND	89	390
Anthracene	1,000	4,000	1,000,000	ND	ND	ND	ND	ND	120	410
Benzo(a)anthracene	2,000	9,000	7,000	ND	ND	ND	ND	ND	270	760
Benzo(a)pyrene	2,000	7,000	2,000	ND	ND	ND	ND	ND	200	770
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	ND	ND	ND	ND	260	740
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	ND	ND	ND	190	670
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	ND	ND	ND	140	290
Chrysene	2,000	7,000	70,000	ND	ND	ND	ND	ND	360	830
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	140
Fluoranthene	4,000	10,000	1,000,000	ND	ND	ND	ND	ND	530	1,400
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	ND	ND	ND	ND	210	680
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	71
Phenanthrene	3,000	20,000	500,000	ND	ND	ND	ND	ND	210	610
Pyrene	4,000	20,000	1,000,000	ND	ND	ND	ND	ND	440	1,400

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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MassDEP = Massachusetts Department of Environmental Protection

TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0036	R01-100830MB-0037	R01-100830MB-0038	R01-100830MB-0039	R01-100830MB-0040	R01-100830MB-0041	R01-100830MB-0042
	SAMPLE LOCATION			P-53 SB-611C	P-53 SB-612A	P-53 SB-612B	P-53 SB-612C	P-53 SB-613A	P-53 SB-613B	P-53 SB-613C
	LABORATORY NUMBER			AB09218	AB09219	AB09220	AB09221	AB09222	AB09223	AB09224
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	300	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	220	76	62	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	2,000	180	71	ND	66	ND	96
Benzo(a)anthracene	2,000	9,000	7,000	4,300	450	160	ND	160	ND	130
Benzo(a)pyrene	2,000	7,000	2,000	2,700	400	150	ND	150	ND	92
Benzo(b)fluoranthene	2,000	8,000	7,000	2,200	350	140	ND	150	ND	130
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	1,300	260	140	ND	120	ND	68
Benzo(k)fluoranthene	1,000	4,000	70,000	580	150	64	ND	67	ND	ND
Chrysene	2,000	7,000	70,000	3,500	440	230	ND	260	ND	120
Dibenzo(a,h)anthracene	500	1,000	700	420	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	11,000	1,000	270	ND	340	96	360
Fluorene	1,000	2,000	1,000,000	440	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	1,500	260	120	ND	120	65	76
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	5,600	490	110	ND	180	ND	290
Pyrene	4,000	20,000	1,000,000	8,100	810	220	ND	290	79	250

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0043	R01-100830MB-0044	R01-100830MB-0045	R01-100830MB-0046	R01-100830MB-0047	R01-100830MB-0048	R01-100830MB-0049
	SAMPLE LOCATION			P-53 SB-614A	P-53 SB-614B	P-53 SB-614C	P-53 SB-615A	P-53 SB-615B	P-53 SB-615C	P-53 SB-616A
	LABORATORY NUMBER			AB09225	AB09226	AB09227	AB09228	AB09229	AB09230	AB09231
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	60	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	540	ND	ND	ND	ND	ND	130
Anthracene	1,000	4,000	1,000,000	730	ND	ND	82	ND	ND	210
Benzo(a)anthracene	2,000	9,000	7,000	970	ND	ND	240	ND	ND	390
Benzo(a)pyrene	2,000	7,000	2,000	710	ND	ND	240	ND	ND	430
Benzo(b)fluoranthene	2,000	8,000	7,000	1,100	ND	ND	230	ND	ND	400
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	900	ND	ND	200	ND	ND	300
Benzo(k)fluoranthene	1,000	4,000	70,000	420	ND	ND	110	ND	ND	170
Chrysene	2,000	7,000	70,000	860	ND	ND	240	ND	ND	390
Dibenzo(a,h)anthracene	500	1,000	700	160	ND	ND	ND	ND	ND	73
Fluoranthene	4,000	10,000	1,000,000	1,700	ND	ND	560	ND	ND	950
Fluorene	1,000	2,000	1,000,000	100	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	930	ND	ND	170	ND	ND	320
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	750	ND	ND	230	ND	ND	420
Pyrene	4,000	20,000	1,000,000	1,700	ND	ND	430	ND	ND	740

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

**SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

COMPOUND	SAMPLE NUMBER			R01-100830MB-0050	R01-100830MB-0051	R01-100830MB-0052	R01-100830MB-0053	R01-100830MB-0054	R01-100830MB-0055	R01-100830MB-0056
	SAMPLE LOCATION			P-53 SB-616B	P-53 SB-616C	P-53 SB-617A	P-53 SB-617B	P-53 SB-617C	P-53 SB-618A	P-53 SB-618B
	LABORATORY NUMBER			AB09232	AB09233	AB09234	AB09235	AB09236	AB09237	AB09238
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	ND	61	ND	ND	74	ND
Anthracene	1,000	4,000	1,000,000	ND	ND	71	ND	ND	97	ND
Benzo(a)anthracene	2,000	9,000	7,000	77	ND	150	ND	ND	240	ND
Benzo(a)pyrene	2,000	7,000	2,000	91	ND	180	ND	ND	210	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	74	ND	190	ND	ND	230	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	150	ND	ND	170	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	84	ND	ND	110	ND
Chrysene	2,000	7,000	70,000	92	ND	190	ND	ND	260	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	150	ND	340	80	ND	500	ND
Fluorene	1,000	2,000	1,000,000	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	70	ND	140	ND	ND	190	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	72	ND	140	ND	ND	220	ND
Pyrene	4,000	20,000	1,000,000	120	ND	320	65	ND	410	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

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* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0057	R01-100830MB-0058	R01-100830MB-0059	R01-100830MB-0060	R01-100830MB-0061	R01-100830MB-0062	R01-100830MB-0063
	SAMPLE LOCATION			P-53 SB-618C	P-53 SB-619A	P-53 SB-619B	P-53 SB-619C	P-53 SB-620A	P-53 SB-620B	P-53 SB-620C
	LABORATORY NUMBER			AB09239	AB09240	AB09241	AB09242	AB09243	AB09244	AB09245
	Background*	Background with Fill**	S-1 & GW-2							
Acenaphthene	500	2,000	1,000,000	ND	69	ND	ND	ND	ND	ND
Acenaphthylene	500	1,000	600,000	ND	110	ND	ND	ND	ND	ND
Anthracene	1,000	4,000	1,000,000	ND	240	ND	ND	79	ND	ND
Benzo(a)anthracene	2,000	9,000	7,000	ND	640	ND	ND	200	ND	ND
Benzo(a)pyrene	2,000	7,000	2,000	ND	580	ND	ND	190	ND	ND
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	600	ND	ND	180	ND	ND
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	390	ND	ND	160	ND	ND
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	290	ND	ND	97	ND	ND
Chrysene	2,000	7,000	70,000	ND	620	ND	ND	240	ND	ND
Dibenzo(a,h)anthracene	500	1,000	700	ND	150	ND	ND	ND	ND	ND
Fluoranthene	4,000	10,000	1,000,000	ND	1,400	79	ND	500	ND	ND
Fluorene	1,000	2,000	1,000,000	ND	73	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	450	ND	ND	130	ND	ND
Naphthalene	500	1,000	40,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	3,000	20,000	500,000	ND	580	ND	ND	230	ND	ND
Pyrene	4,000	20,000	1,000,000	ND	1,100	ND	ND	320	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 1

SUMMARY TABLE - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN SOIL ANALYSIS
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

COMPOUND	SAMPLE NUMBER			R01-100830MB-0064	R01-100830MB-0065	R01-100830MB-0066			
	SAMPLE LOCATION			P-53 SB-621A	P-53 SB-621B	P-53 SB-621C			
	LABORATORY NUMBER			AB09246	AB09247	AB09248			
	Background*	Background with Fill**	S-1 & GW-2						
Acenaphthene	500	2,000	1,000,000	ND	ND	ND			
Acenaphthylene	500	1,000	600,000	ND	ND	ND			
Anthracene	1,000	4,000	1,000,000	ND	ND	ND			
Benzo(a)anthracene	2,000	9,000	7,000	ND	ND	ND			
Benzo(a)pyrene	2,000	7,000	2,000	ND	ND	ND			
Benzo(b)fluoranthene	2,000	8,000	7,000	ND	ND	ND			
Benzo(g,h,i)perylene	1,000	3,000	1,000,000	ND	ND	ND			
Benzo(k)fluoranthene	1,000	4,000	70,000	ND	ND	ND			
Chrysene	2,000	7,000	70,000	ND	ND	ND			
Dibenzo(a,h)anthracene	500	1,000	700	ND	ND	ND			
Fluoranthene	4,000	10,000	1,000,000	61	ND	ND			
Fluorene	1,000	2,000	1,000,000	ND	ND	ND			
Indeno(1,2,3-cd)pyrene	1,000	3,000	7,000	ND	ND	ND			
Naphthalene	500	1,000	40,000	ND	ND	ND			
Phenanthrene	3,000	20,000	500,000	ND	ND	ND			
Pyrene	4,000	20,000	1,000,000	ND	ND	ND			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.

All results are reported in micrograms per Kilogram (µg/Kg).

ND = Value is Non-Detected.

Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.

* = Refers to background levels of PAH in natural soil as defined in Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

** = Refers to background levels of PAH in soil containing coal or wood ash associated with fill material as defined in the MassDEP Technical Update to Section 2.3 of the Guidance for Disposal Risk Characterization - In Support of the MCP.

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TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0001	R01-100830MB-0002	R01-100830MB-0003	R01-100830MB-0004	R01-100830MB-0005	R01-100830MB-0006	R01-100830MB-0007
SAMPLE LOCATION		P-53 SB-600A	P-53 SB-600B	P-53 SB-600C	P-53 SB-601A	P-53 SB-601B	P-53 SB-601C	P-53 SB-602A
LABORATORY NUMBER		AB09183	AB09184	AB09185	AB09186	AB09187	AB09188	AB09189
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7.2	5.5	5.4	7.8	6.8	6.7	6.4
Barium	1,000	57	31	28	50	37	38	39
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	29	12	11	21	14	13	13
Lead	300	140	15	12	120	33	31	36
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.18	ND	ND	0.68	ND	ND	0.2
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.18	ND	ND	0.68	ND	ND	0.2

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
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ND = Value is Non-Detected.
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MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0008	R01-100830MB-0009	R01-100830MB-0010	R01-100830MB-0011	R01-100830MB-0012	R01-100830MB-0013	R01-100830MB-0014
SAMPLE LOCATION		P-53 SB-602B	P-53 SB-602C	P-53 SB-603A	P-53 SB-603B	P-53 SB-603C	P-53 SB-604A	P-53 SB-604B
LABORATORY NUMBER		AB09190	AB09191	AB09192	AB09193	AB09194	AB09195	AB09196
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	5.5	5.5	6.3	6.3	5.1	8.7	6.1
Barium	1,000	30	32	33	33	28	50	29
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	12	14	13	15	11	150	28
Lead	300	9.1	5.9	31	15	5.9	100	15
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	0.3	ND	ND	0.4	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	0.30	ND	ND	0.40	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
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TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0015	R01-100830MB-0016	R01-100830MB-0017	R01-100830MB-0018	R01-100830MB-0019	R01-100830MB-0020	R01-100830MB-0021
SAMPLE LOCATION		P-53 SB-604C	P-53 SB-605A	P-53 SB-605B	P-53 SB-605C	P-53 SB-606A	P-53 SB-606B	P-53 SB-606C
LABORATORY NUMBER		AB09197	AB09198	AB09199	AB09200	AB09201	AB09202	AB09203
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	5.8	8.3	5.7	6.7	8.2	6.4	6.9
Barium	1,000	25	62	41	30	43	39	30
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	12	17	13	16	16	14	15
Lead	300	7.4	92	10	9.1	53	21	7.7
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	1.2	ND	ND	0.42	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	1.2	ND	ND	0.42	ND	ND

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TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0022	R01-100830MB-0023	R01-100830MB-0024	R01-100830MB-0025	R01-100830MB-0026	R01-100830MB-0027	R01-100830MB-0028
SAMPLE LOCATION		P-53 SB-607A	P-53 SB-607B	P-53 SB-607C	P-53 SB-608A	P-53 SB-608B	P-53 SB-608C	P-53 SB-609A
LABORATORY NUMBER		AB09204	AB091205	AB09206	AB09207	AB091208	AB091209	AB09210
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	8.3	7	6.1	8.5	6.3	5.7	9.3
Barium	1,000	69	43	20	49	31	24	44
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	16	14	13	15	13	12	14
Lead	300	61	14	5.4	59	9.2	6.2	34
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.51	ND	ND	0.54	ND	ND	0.21
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.51	ND	ND	0.54	ND	ND	0.21

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TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0029	R01-100830MB-0030	R01-100830MB-0031	R01-100830MB-0032	R01-100830MB-0033	R01-100830MB-0034	R01-100830MB-0035
SAMPLE LOCATION		P-53 SB-609B	P-53 SB-609C	P-53 SB-610A	P-53 SB-610B	P-53 SB-610C	P-53 SB-611A	P-53 SB-611B
LABORATORY NUMBER		AB09211	AB09212	AB09213	AB09214	AB09215	AB09216	AB09217
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.6	5.7	5.3	6.5	6.7	8.3	9.1
Barium	1,000	32	22	46	33	23	47	51
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	14	12	13	14	14	16	17
Lead	300	8.9	6.4	16	8.9	6.1	67	87
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	ND	0.16	ND	0.82	0.51
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	ND	0.16	ND	0.82	0.5

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0036	R01-100830MB-0037	R01-100830MB-0038	R01-100830MB-0039	R01-100830MB-0040	R01-100830MB-0041	R01-100830MB-0042
SAMPLE LOCATION		P-53 SB-611C	P-53 SB-612A	P-53 SB-612B	P-53 SB-612C	P-53 SB-613A	P-53 SB-613B	P-53 SB-613C
LABORATORY NUMBER		AB09218	AB09219	AB09220	AB09221	AB09222	AB09223	AB09224
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	8.2	10	9.8	6.9	8.5	7.6	6.1
Barium	1,000	48	130	42	28	43	32	20
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	16	23	14	15	18	15	12
Lead	300	55	72	41	7.5	48	20	8.6
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.58	0.6	ND	ND	0.5	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.58	0.60	ND	ND	0.50	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0043	R01-100830MB-0044	R01-100830MB-0045	R01-100830MB-0046	R01-100830MB-0047	R01-100830MB-0048	R01-100830MB-0049
SAMPLE LOCATION		P-53 SB-614A	P-53 SB-614B	P-53 SB-614C	P-53 SB-615A	P-53 SB-615B	P-53 SB-615C	P-53 SB-616A
LABORATORY NUMBER		AB09225	AB09226	AB09227	AB09228	AB09229	AB09230	AB09231
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	7.6	6.6	6.8	9.9	5.9	6.5	8.2
Barium	1,000	50	24	24	43	30	28	48
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	15	14	12	21	12	14	16
Lead	300	53	8.9	5.3	60	12	8	55
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	0.28	ND	ND	0.32	ND	ND	0.27
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	0.28	ND	ND	0.32	ND	ND	0.27

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0050	R01-100830MB-0051	R01-100830MB-0052	R01-100830MB-0053	R01-100830MB-0054	R01-100830MB-0055	R01-100830MB-0056
SAMPLE LOCATION		P-53 SB-616B	P-53 SB-616C	P-53 SB-617A	P-53 SB-617B	P-53 SB-617C	P-53 SB-618A	P-53 SB-618B
LABORATORY NUMBER		AB09232	AB09233	AB09234	AB09235	AB09236	AB09237	AB09238
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	8.9	6.5	8.5	7	6.5	11	7
Barium	1,000	44	29	42	34	24	64	23
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	15	15	20	14	14	17	14
Lead	300	30	7.7	54	17	7.3	100	11
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	ND	ND	ND	0.3	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	ND	ND	ND	0.30	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0057	R01-100830MB-0058	R01-100830MB-0059	R01-100830MB-0060	R01-100830MB-0061	R01-100830MB-0062	R01-100830MB-0063
SAMPLE LOCATION		P-53 SB-618C	P-53 SB-619A	P-53 SB-619B	P-53 SB-619C	P-53 SB-620A	P-53 SB-620B	P-53 SB-620C
LABORATORY NUMBER		AB09239	AB09240	AB09241	AB09242	AB09243	AB09244	AB09245
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	6.5	9.6	7	6.9	12	7.7	7.5
Barium	1,000	23	50	26	25	46	26	25
Cadmium	2	ND	ND	ND	ND	ND	ND	ND
Chromium	30 (T)	12	17	15	15	18	15	15
Lead	300	6.8	67	10	8.1	50	11	7.9
PCBs								
Aroclor-1242	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	2	ND	ND	ND	ND	0.25	ND	ND
Aroclor-1262	2	ND	ND	ND	ND	ND	ND	ND
Aroclor-1268	2	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs	2	ND	ND	ND	ND	0.25	ND	ND

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 2
SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
TOMBARELLO SITE - 53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0064	R01-100830MB-0065	R01-100830MB-0066				
SAMPLE LOCATION		P-53 SB-621A	P-53 SB-621B	P-53 SB-621C				
LABORATORY NUMBER		AB09246	AB09247	AB09248				
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	5.5	6.9	6.5				
Barium	1,000	51	35	23				
Cadmium	2	ND	ND	ND				
Chromium	30 (T)	13	15	14				
Lead	300	18	11	6.1				
PCBs								
Aroclor-1242	2	ND	ND	ND				
Aroclor-1248	2	ND	ND	ND				
Aroclor-1254	2	ND	ND	ND				
Aroclor-1260	2	ND	ND	ND				
Aroclor-1262	2	ND	ND	ND				
Aroclor-1268	2	ND	ND	ND				
TOTAL PCBs	2	ND	ND	ND				

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory
All results are reported in milligrams per Kilogram (mg/Kg).
ND = Value is Non-Detected.
Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
MCP = Massachusetts Contingency Plan.
(T) = Value for total chromium listed.

TABLE 3

**SUMMARY OF
LEAD FIELD SCREENING RESULTS
53 HOFFMAN AVENUE
LAWRENCE, MASSACHUSETTS**

Sample Number	Sample Location	Sample Collection Date	XRF Lead Screening Results (mg/Kg)	EPA Laboratory Lead Confirmation Results (mg/Kg)
R01-100830MB-0626	P53 Grid 601 NSW 1'	5/12/2011	44.2	----
R01-100830MB-0627	P53 Grid 601 ESW 1'	5/12/2011	52.7	----
R01-100830MB-0628	P53 Grid 601 Floor 1'	5/12/2011	78	----
R01-100830MB-0629	P53 Grid 601 SSW 1'	5/12/2011	168.5	130
R01-100830MB-0630	P53 Grid 606 Floor 1'	5/12/2011	66.2	----
R01-100830MB-0631	P53 Grid 600 ESW 1'	5/12/2011	96.7	----
R01-100830MB-0632	P53 Grid 600 SSW 1'	5/12/2011	461	----
R01-100830MB-0633	P53 Grid 600 Floor 1'	5/12/2011	38.5	----
R01-100830MB-0634	P53 Grid 611 NSW 1'	5/12/2011	71.9	----
R01-100830MB-0635	P53 Grid 611 Floor 1'	5/13/2011	27.9	----
R01-100830MB-0637	P53 Grid 605 Floor 1'	5/13/2011	29.1	9
R01-100830MB-0639	P53 Grid 610 Floor 1'	5/13/2011	36.1	----
R01-100830MB-0640	P53 Grid 610 NSW 1'	5/13/2011	100.1	66
R01-100830MB-0642	P53 Grid 614 Floor 1'	5/16/2011	37.1	----
R01-100830MB-0643	P53 Grid 614 NSW 1'	5/16/2011	128.6	----
R01-100830MB-0644	P53 Grid 618 Floor 1'	5/16/2011	26.9	10
R01-100830MB-0645	P53 Grid 618 NSW 1'	5/16/2011	137.9	----

Notes:

ND = Not Detected

---- = Not analyzed

EPA Laboratory = EPA Office of Environmental Measurement and Evaluation Laboratory,
North Chelmsford, Massachusetts

mg/Kg = Milligrams per Kilogram

XRF = X-Ray Fluorescence

NSW = North Side Wall

ESW = East Side Wall

WSW = West Side Wall

' = foot

TABLE 4

SUMMARY TABLE - METALS AND POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL ANALYSES
 TOMBARELLO SITE - 53 HOFFMAN AVENUE
 LAWRENCE, MASSACHUSETTS

SAMPLE NUMBER		R01-100830MB-0636	R01-100830MB-0638	R01-100830MB-0641	R01-100830MB-0658			
SAMPLE LOCATION		P53 Grid 601 SSW 1'	P53 Grid 605 Floor 1'	P53 Grid 610 NSW 1'	P53 Grid 618 Floor 1'			
LABORATORY NUMBER		AB17532	AB17533	AB17534	AB17802			
ANALYTES	S-1 & GW-2							
METALS								
Arsenic	20	8.9	4.6	9	7			
Barium	1,000	57	52	51	29			
Cadmium	2	1.1	ND	ND	ND			
Chromium	30 (T)	18	13	18	14			
Lead	300	130	9	66	10			
PCBs								
Aroclor-1242	2	ND	ND	ND	ND			
Aroclor-1248	2	ND	ND	ND	ND			
Aroclor-1254	2	ND	ND	ND	ND			
Aroclor-1260	2	0.58	ND	0.69	0.08			
Aroclor-1262	2	ND	ND	ND	ND			
Aroclor-1268	2	ND	ND	ND	ND			
TOTAL PCBs	2	0.58	ND	0.69	0.08			

NOTES: Samples analyzed by EPA Office of Environmental Measurement and Evaluation Laboratory.
 All results are reported in milligrams per Kilogram (mg/Kg).
 ND = Value is Non-Detected.
 Bolded and shaded values exceed MCP S-1 Soil & GW-2 Criteria.
 MCP = Massachusetts Contingency Plan.
 (T) = Value for total chromium listed.

Appendix C

Photodocumentation Log

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PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of 53 Hoffman Avenue. Photograph taken facing south.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0828 hours
CAMERA: Samsung SL605



SCENE: View of the western portion of the front yard at 53 Hoffman Avenue. Photograph taken facing south.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0829 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the eastern portion of the front yard at 53 Hoffman Avenue. Photograph taken facing south.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0829 hours
CAMERA: Samsung SL605



SCENE: View of the eastern portion of the back lawn at 53 Hoffman Avenue. Photograph taken facing south.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0831 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the back lawn at 53 Hoffman Avenue. Photograph taken facing west.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0832 hours
CAMERA: Samsung SL605



SCENE: View of the back lawn at 53 Hoffman Avenue. Photograph taken facing east.

DATE: 30 August 2010
PHOTOGRAPHER: R. Sharp

TIME: 0833 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the back lawn at 53 Hoffman Avenue. Photograph taken facing east.

DATE: 11 May 2011

TIME: 0904 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the back lawn at 53 Hoffman Avenue. Photograph taken facing east.

DATE: 11 May 2011

TIME: 0905 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of excavation activities in the backyard at 53 Hoffman Avenue. Photograph taken facing north.

DATE: 12 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 1133 hours
CAMERA: Samsung SL605



SCENE: View of the excavation in the backyard at 53 Hoffman Avenue. Photograph taken facing west.

DATE: 16 May 2011
PHOTOGRAPHER: R. Sharp

TIME: 0750 hours
CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the excavation in the backyard at 53 Hoffman Avenue. Photograph taken facing north.

DATE: 16 May 2011

PHOTOGRAPHER: R. Sharp

TIME: 0750 hours

CAMERA: Samsung SL605



SCENE: View of plants in the backyard at 53 Hoffman Avenue. Photograph taken facing north.

DATE: 8 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1555 hours

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the new fence at 53 Hoffman Avenue. Photograph taken facing north.

DATE: 28 June 2011

TIME: 0806 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605



SCENE: View of the restored backyard at 53 Hoffman Avenue. Photograph taken facing south.

DATE: 28 June 2011

TIME: 1424 hours

PHOTOGRAPHER: R. Sharp

CAMERA: Samsung SL605

PHOTODOCUMENTATION LOG
Tombarello Site – 53 Hoffman Avenue • Lawrence, Massachusetts



SCENE: View of the restored backyard at 53 Hoffman Avenue. Photograph taken facing south.

DATE: 28 June 2011

PHOTOGRAPHER: R. Sharp

TIME: 1801 hours

CAMERA: Samsung SL605




Figure 3
Sample Location Map
Tombarello Site
207 Marston Street
Lawrence, Massachusetts

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-07-0007
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: Robert Sharp
 Modified on: 13 December 2010

LEGEND

- Grids Sampled
- Grids Not Sampled
- Soil Piles
- Property Boundary


 0 25 50 100 150 200 250 300 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START



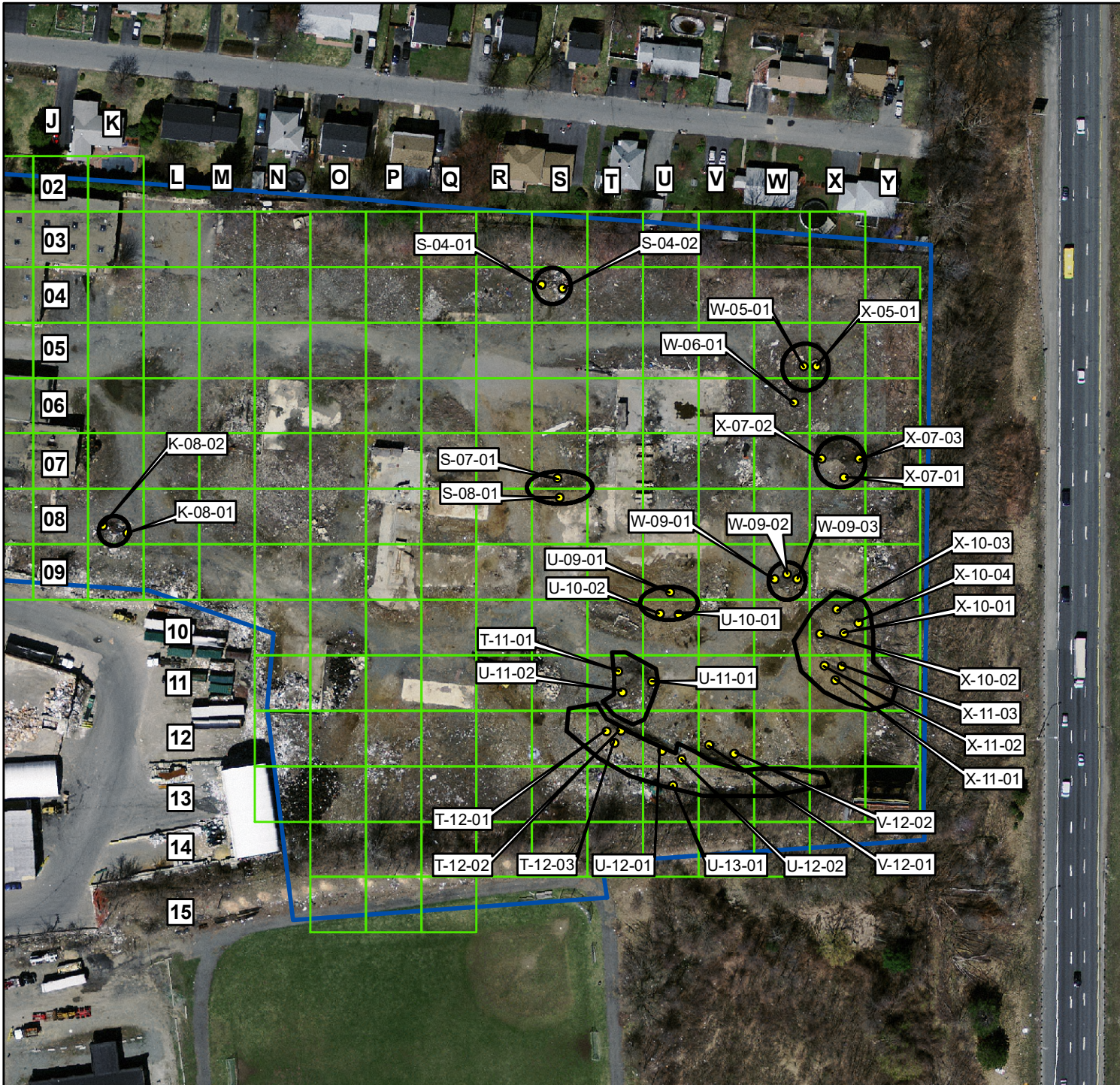



Figure 4
Soil Pile
Sample Location Map
Tombarello Site
207 Marston Street
Lawrence, Massachusetts

EPA Region I
 Superfund Technical Assessment and
 Response Team (START) III
 Contract No. EP-W-05-042

TDD Number: 10-07-0007
 Created by: Robert Sharp
 Created on: 11 August 2010
 Modified by: Robert Sharp
 Modified on: 13 December 2010

LEGEND

- Pile Samples
- Soil Piles
- Property Boundary


 0 25 50 100 150 200 Feet

Data Sources:
 Imagery: Mass GIS
 All other data: START

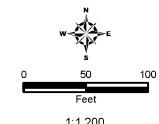


**FIGURE 2
ORTHOPHOTOGRAPH**

LEGEND

-  Excavation Area
-  Soil Stabilization Area
-  Property Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (April 2009) Orthophoto Sheet ID # 22079410_15
2. Parcels provided by MassGIS

Tombarello Site
207 Marston Street
Lawrence, Massachusetts

August 2011



Table 1
Post Excavation Soil Analytical Results
Former Tombarello
207 Marston Street
Lawrence, Massachusetts

Sample Identification	MCP Method 2 Direct Contact Soil Standards			TSCA	EPC for Excavation Area	PX-01	PX-02	PX-03	PX-04	PX-05	PX-06	PX-07	PX-08	PX-09	PX-10	PX-11	PX-11 (Duplicate)	PX-12	PX-13	PX-14	PX-15	
	S-1	S-2	S-3	Low occupancy		5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	
Depth Collected (Inches)						12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Sample Type						Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Polychlorinated Biphenyls (PCBs)																						
Aroclor 1016						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1221						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1232						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1242						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1248						<0.842	<0.818	<0.0417	<0.0420	<0.0371	0.152	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1254						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	14.8	5.56	0.615	4.35	1.29	1.15	0.914	0.523	<0.129	<0.120	
Aroclor 1260						4.9	5.17	0.569	0.533	0.24	0.341	<0.990	<1.1	1.67	2.12	2.57	2.26	2.2	1.29	1.72	0.23	
Aroclor 1262						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Aroclor 1268						<0.842	<0.818	<0.0417	<0.0420	<0.0371	<0.0365	<0.990	<1.1	<0.122	<0.503	<0.576	<0.555	<0.577	<0.129	<0.129	<0.120	
Total PCBs	2	3	3	25	3.45	4.9	5.17	0.569	0.533	0.24	0.493	14.8	5.56	2.285	6.47	3.86	3.41	3.114	1.813	1.72	0.23	
RCRA-8 Metals																						
Arsenic	20	20	20		9	7.0	7.1	6.0	11	10	8.4	14	8.2	6	8.8	7.8	7.8	8.7	9.9	11	5.2	
Barium	1000	3000	5000		128	46	30	22	55	53	250	57	170	280	230	310	150	120	96	110	62	
Cadmium	2	30	30		4	1.9	0.64	<0.47	0.63	0.84	23	1.7	3.8	2.4	5.3	3.7	3.6	2.6	1.7	3	0.58	
Chromium	30	200	200		26	36	17	13	28	23	32	25	38	26	30	28	30	25	21	24	15	
Lead	300	300	300		173	150	29	14	86	110	3,500	150	230	340	410	270	260	240	150	120	38	
Mercury	20	30	30		0.37	1.1	<0.10	0.13	0.3	0.12	0.19	0.24	0.26	0.24	0.76	0.38	0.5	0.38	0.37	0.27	<0.09	
Selenium	400	800	800		ND	<2.2	<2.3	<2.4	<2.2	<2.1	<1.9	<1.9	<2.2	<2.5	<2.2	<2.1	<2.0	<2.4	<2.5	<2.3	<2.4	
Silver	100	200	200		0.46	<0.44	<0.46	<0.47	<0.45	<0.42	<0.38	<0.38	<0.45	<0.50	0.46	<0.43	<0.40	<0.48	<0.50	<0.46	<0.48	

Notes

Results reported in milligrams per kilogram (mg/kg) which is equivalent to ppm

"<" indicates compound was not detected (ND). Detection limit is provided.

EPC - exposure point concentration, which is equivalent to the average of the samples collected from within the excavation area. For conservatism, non-detect results are not included in the average.

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
Page 1 of 8

Sample Location					MW-1				MW-2	MW-2A	MW-3	MW-3A	MW-4	MW-5		MW-6	
Sample Date					07/09/98	06/10/99	02/13/03	06/16/16	07/09/98	07/30/98	07/09/98	07/30/98	07/09/98	06/10/99	02/13/03	06/10/99	02/13/03
QC Identifier																	
Volatiles	Units	GW-2	GW-3	GW UCL													
1,1,1,2-Tetrachloroethane	ug/L	10	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/L	4000	20000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/L	9	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/L	900	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/L	2000	20000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/L	80	30000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/L	200	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/L	2	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/L	8000	2000	80000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/L	5	20000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/L	3	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/L	6000	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/L	60	8000	80000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/L	6000	50000	100000	NA	NA	NA	100 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/L	50000	50000	100000	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/L	--	--	--	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	ug/L	--	--	--	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	ug/L	50000	50000	100000	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/L	50000	50000	100000	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/L	1000	10000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/L	6	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/L	700	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/L	7	800	8000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-7		MW-8	MW-9	MW-11	MW-11F	MW-12	MW-13		MW-15	MW-16
Sample Date					06/10/99	02/13/03	06/13/16	06/13/16	06/13/16	06/17/16	06/14/16	06/14/16		06/16/16	06/13/16
QC Identifier												FD	FD		
Volatiles	Units	GW-2	GW-3	GW UCL											
1,1,1,2-Tetrachloroethane	ug/L	10	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	ug/L	4000	20000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	9	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	ug/L	900	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	ug/L	2000	20000	100000	NA	NA	1 U	1 U	2.3	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	ug/L	80	30000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	200	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	ug/L	--	--	--	NA	NA	10	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	ug/L	2	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	8000	2000	80000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	ug/L	5	20000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	ug/L	3	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	ug/L	--	--	--	NA	NA	2.5	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	6000	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	60	8000	80000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	ug/L	6000	50000	100000	NA	NA	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U
2,2-Dichloropropane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
2-Butanone	ug/L	50000	50000	100000	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
2-Hexanone	ug/L	--	--	--	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene	ug/L	--	--	--	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	ug/L	50000	50000	100000	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
Acetone	ug/L	50000	50000	100000	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
Benzene	ug/L	1000	10000	100000	NA	NA	1.9	1 U	1.3	NA	1 U	1.8	1.9	1 U	1 U
Bromobenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	ug/L	6	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Bromoform	ug/L	700	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Bromomethane	ug/L	7	800	8000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-1				MW-2	MW-2A	MW-3	MW-3A	MW-4	MW-5		MW-6	
Sample Date					07/09/98	06/10/99	02/13/03	06/16/16	07/09/98	07/30/98	07/09/98	07/30/98	07/09/98	06/10/99	02/13/03	06/10/99	02/13/03
QC Identifier																	
Volatiles (cont.)	Units	GW-2	GW-3	GW UCL													
Carbon tetrachloride	ug/L	2	5000	50000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/L	200	1000	10000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/L	50	20000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/L	20	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/L	20	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl ether	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diisopropyl Ether	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/L	20000	5000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/L	50	3000	30000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/L	50000	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	ug/L	2000	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	700	20000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/L	100	6000	60000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Amyl methyl ether	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Ethyl Ether	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/L	50	30000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	ug/L	--	--	--	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/L	50000	40000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/L	80	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/L	5	5000	50000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/L	--	--	--	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/L	2	50000	100000	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/L	3000	5000	100000	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-7		MW-8	MW-9	MW-11	MW-11F	MW-12	MW-13		MW-15	MW-16
Sample Date					06/10/99	02/13/03	06/13/16	06/13/16	06/13/16	06/17/16	06/14/16	06/14/16		06/16/16	06/13/16
QC Identifier												FD	FD		
Volatiles (cont.)	Units	GW-2	GW-3	GW UCL											
Carbon tetrachloride	ug/L	2	5000	50000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	ug/L	200	1000	10000	NA	NA	1 U	1 U	1 U	NA	1 U	140	150	1 U	1 U
Chloroethane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Chloroform	ug/L	50	20000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Chloromethane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	20	50000	100000	NA	NA	1.6	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	ug/L	20	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Dibromomethane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	ug/L	--	--	--	NA	NA	1 U	17	1 U	NA	1 U	1 U	1 U	1 U	1 U
Diethyl ether	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Diisopropyl Ether	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	ug/L	20000	5000	100000	NA	NA	2.6	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	ug/L	50	3000	30000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	ug/L	--	--	--	NA	NA	10	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	ug/L	50000	50000	100000	NA	NA	4.6	1.6	1 U	NA	1 U	1 U	1 U	1 U	1 U
Methylene chloride	ug/L	2000	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Naphthalene	ug/L	700	20000	100000	NA	NA	3.1	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
n-Butylbenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	ug/L	--	--	--	NA	NA	1.5	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
o-Xylene	ug/L	--	--	--	NA	NA	5.3	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Styrene	ug/L	100	6000	60000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
tert-Amyl methyl ether	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Tert-Butyl Ethyl Ether	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	ug/L	50	30000	100000	NA	NA	1 U	10	1 U	NA	1 U	1 U	1 U	1 U	1 U
Tetrahydrofuran	ug/L	--	--	--	NA	NA	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U
Toluene	ug/L	50000	40000	100000	NA	NA	3.6	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	ug/L	80	50000	100000	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Trichloroethene	ug/L	5	5000	50000	NA	NA	2.7	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	ug/L	--	--	--	NA	NA	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	ug/L	2	50000	100000	NA	NA	1	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Xylene (total)	ug/L	3000	5000	100000	NA	NA	15	5 U	5 U	NA	5 U	5 U	5 U	5 U	5 U

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-1				MW-2	MW-2A	MW-3	MW-3A	MW-4	MW-5		MW-6	
Sample Date					07/09/98	06/10/99	02/13/03	06/16/16	07/09/98	07/30/98	07/09/98	07/30/98	07/09/98	06/10/99	02/13/03	06/10/99	02/13/03
QC Identifier																	
PAHs	Units	GW-2	GW-3	GW UCL													
1,4-Dioxane	ug/L	6000	50000	100000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/L	2000	20000	100000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	--	10000	100000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	10000	40	100000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	--	30	600	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	--	1000	10000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	--	500	5000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	--	400	4000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	--	20	500	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	--	100	1000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	--	70	700	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	--	40	400	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	--	200	2000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	--	40	400	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	--	100	1000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	700	20000	100000	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	--	10000	100000	NA	NA	NA	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	--	20	600	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPH																	
2-Methylnaphthalene	ug/L	2000	20000	100000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/L	--	10000	100000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/L	10000	40	100000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/L	--	30	600	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/L	--	1000	10000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/L	--	500	5000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/L	--	400	4000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	--	20	500	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/L	--	100	1000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
C11-C22 Aromatics	ug/L	50000	5000	100000	NA	NA	NA	125 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
C19-C36 Aliphatics	ug/L	--	50000	100000	NA	NA	NA	125 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C18 Aliphatics	ug/L	5000	50000	100000	NA	NA	NA	125 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/L	--	70	700	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	--	40	400	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	--	200	2000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/L	--	40	400	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	--	100	1000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	700	20000	100000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/L	--	10000	100000	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/L	--	20	600	NA	NA	NA	6.25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-7		MW-8	MW-9	MW-11	MW-11F	MW-12	MW-13		MW-15	MW-16
Sample Date					06/10/99	02/13/03	06/13/16	06/13/16	06/13/16	06/17/16	06/14/16	06/14/16		06/16/16	06/13/16
QC Identifier												FD	FD		
PAHs	Units	GW-2	GW-3	GW UCL											
1,4-Dioxane	ug/L	6000	50000	100000	NA	NA	0.1 U	0.1 U	0.26	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Methylnaphthalene	ug/L	2000	20000	100000	NA	NA	0.67	0.1 U	0.1 U	NA	0.25	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthene	ug/L	--	10000	100000	NA	NA	0.16	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthylene	ug/L	10000	40	100000	NA	NA	0.1 U	0.1 U	0.1 U	NA	0.19	0.1 U	0.1 U	0.1 U	0.1 U
Anthracene	ug/L	--	30	600	NA	NA	0.13	0.1 U	0.1 U	NA	0.14	0.13	0.12	0.1 U	0.1 U
Benzo(a)anthracene	ug/L	--	1000	10000	NA	NA	0.12	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)pyrene	ug/L	--	500	5000	NA	NA	0.17	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.13	0.1 U
Benzo(b)fluoranthene	ug/L	--	400	4000	NA	NA	0.14	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(g,h,i)perylene	ug/L	--	20	500	NA	NA	0.11	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	ug/L	--	100	1000	NA	NA	0.1 U	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chrysene	ug/L	--	70	700	NA	NA	0.11	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenz(a,h)anthracene	ug/L	--	40	400	NA	NA	0.1 U	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluoranthene	ug/L	--	200	2000	NA	NA	0.31	0.1 U	0.1 U	NA	0.11	0.1 U	0.1 U	0.19	0.1 U
Fluorene	ug/L	--	40	400	NA	NA	0.13	0.1 U	0.1 U	NA	0.1	0.1 U	0.1 U	0.1 U	0.1 U
Indeno(1,2,3-cd)pyrene	ug/L	--	100	1000	NA	NA	0.1 U	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	ug/L	700	20000	100000	NA	NA	1.4	0.1 U	0.1 U	NA	0.67	0.64	0.77	0.1 U	0.1 U
Phenanthrene	ug/L	--	10000	100000	NA	NA	0.37	0.1 U	0.1 U	NA	0.36	0.1 U	0.1 U	0.19	0.16
Pyrene	ug/L	--	20	600	NA	NA	0.25	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.14	0.1 U
EPH															
2-Methylnaphthalene	ug/L	2000	20000	100000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Acenaphthene	ug/L	--	10000	100000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Acenaphthylene	ug/L	10000	40	100000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Anthracene	ug/L	--	30	600	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Benzo(a)anthracene	ug/L	--	1000	10000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Benzo(a)pyrene	ug/L	--	500	5000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Benzo(b)fluoranthene	ug/L	--	400	4000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Benzo(g,h,i)perylene	ug/L	--	20	500	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Benzo(k)fluoranthene	ug/L	--	100	1000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
C11-C22 Aromatics	ug/L	50000	5000	100000	NA	NA	127 U	135 U	130 U	NA	118 U	123 U	132 U	112 U	125 U
C19-C36 Aliphatics	ug/L	--	50000	100000	NA	NA	127 U	135 U	130 U	NA	118 U	123 U	132 U	112 U	125 U
C9-C18 Aliphatics	ug/L	5000	50000	100000	NA	NA	127 U	135 U	130 U	NA	118 UJ	123 U	132 U	112 U	125 U
Chrysene	ug/L	--	70	700	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Dibenz(a,h)anthracene	ug/L	--	40	400	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Fluoranthene	ug/L	--	200	2000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Fluorene	ug/L	--	40	400	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Indeno(1,2,3-cd)pyrene	ug/L	--	100	1000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Naphthalene	ug/L	700	20000	100000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 UJ	6.17 U	6.58 U	5.62 U	6.25 U
Phenanthrene	ug/L	--	10000	100000	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U
Pyrene	ug/L	--	20	600	NA	NA	6.33 U	6.76 U	6.49 U	NA	5.88 U	6.17 U	6.58 U	5.62 U	6.25 U

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-1				MW-2	MW-2A	MW-3	MW-3A	MW-4	MW-5		MW-6	
Sample Date					07/09/98	06/10/99	02/13/03	06/16/16	07/09/98	07/30/98	07/09/98	07/30/98	07/09/98	06/10/99	02/13/03	06/10/99	02/13/03
QC Identifier																	
Metals	Units	GW-2	GW-3	GW UCL													
Arsenic	ug/L	--	900	9000	6	10 U	NA	0.05 J	5 U	53	24	143	21	10 U	NA	10 U	NA
Barium	ug/L	--	50000	100000	54	NA	NA	14.5 J	177	329	180	915	996	NA	NA	NA	NA
Cadmium	ug/L	--	4	50	1 U	NA	NA	0.042 J	1 U	1 U	1 U	1	3.6	NA	NA	NA	NA
Chromium	ug/L	--	300	3000	5 U	NA	NA	5.2 U	5 U	145	33	477	27	NA	NA	13	NA
Lead	ug/L	--	10	150	5	5 U	NA	0.5 U	5	25	31	58	1560	5 U	NA	5 U	NA
Mercury	ug/L	--	20	200	2 U	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.64	NA	NA	NA	NA
Selenium	ug/L	--	100	1000	5 U	NA	NA	0.44 J	5 U	5 U	9	6	5 U	NA	NA	NA	NA
Silver	ug/L	--	7	1000	5 U	NA	NA	0.5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	NA	NA
Dissolved Metals																	
Arsenic	ug/L	--	900	9000	5 U	NA	50 U	NA	5 U	5 U	5 U	5 U	5 U	NA	50 U	NA	50 U
Barium	ug/L	--	50000	100000	39	NA	50 U	NA	177	49	70	48	108	NA	70	NA	70
Cadmium	ug/L	--	4	50	1 U	NA	50 U	NA	1 U	1 U	1 U	1 U	1 U	NA	50 U	NA	50 U
Chromium	ug/L	--	300	3000	5 U	NA	20 U	NA	5 U	5 U	5 U	5 U	5 U	NA	20 U	NA	20 U
Lead	ug/L	--	10	150	3 U	NA	5 U	NA	5 U	3 U	3 U	3 U	6	NA	6	NA	5 U
Mercury	ug/L	--	20	200	2 U	NA	0.5 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	0.5 U	NA	0.5 U
Selenium	ug/L	--	100	1000	5 U	NA	10 U	NA	5 U	5 U	5 U	5 U	5 U	NA	10 U	NA	10 U
Silver	ug/L	--	7	1000	5 U	NA	5 U	NA	5 U	5 U	5 U	5 U	5 U	NA	5 U	NA	5 U
Pesticides/PCBs																	
Aroclor 1016	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1221	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1262	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1268	ug/L	5	10	100	NA	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor, Total	ug/L	5	10	100	3.6 U	NA	NA	0.5 UJ	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	NA	NA	NA	NA
General Chemistry																	
Cyanide	ug/L	--	30	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (PAC)	ug/L	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

Table 3-8
Summary of Historical and TBA Groundwater Analytical Results
Former Tombarello Property
Lawrence, Massachusetts
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Sample Location					MW-7		MW-8	MW-9	MW-11	MW-11F	MW-12	MW-13		MW-15	MW-16
Sample Date					06/10/99	02/13/03	06/13/16	06/13/16	06/13/16	06/17/16	06/14/16	06/14/16		06/16/16	06/13/16
QC Identifier												FD	FD		
Metals	Units	GW-2	GW-3	GW UCL											
Arsenic	ug/L	--	900	9000	10 U	NA	12	3.3	10	2.4	0.5 U	5.44	5.13	1.78	0.32 J
Barium	ug/L	--	50000	100000	NA	NA	100	40	1400	100	45.2	46.3	46.2	24.4 J	36
Cadmium	ug/L	--	4	50	NA	NA	0.53 J	1 U	2.2	0.31 J	0.049 J	0.061 J	0.063 J	0.049 J	1 U
Chromium	ug/L	--	300	3000	16	NA	0.6 J	2 U	0.62 J	2 U	5.2 U	5.2 U	5.2 U	5.2 U	2 U
Lead	ug/L	--	10	150	5 U	NA	69	0.4 J	25	0.36 J	0.5 U	0.5 U	0.5 U	1.31	0.29 J
Mercury	ug/L	--	20	200	NA	NA	0.2 U	0.2 U	0.2 U	0.03 J	0.2 U	0.031 J	0.2 U	NA	0.2 U
Selenium	ug/L	--	100	1000	NA	NA	0.39 J	0.74 J	1.9 J	5 U	0.5 U	0.23 J	0.5 U	0.5 U	5 U
Silver	ug/L	--	7	1000	NA	NA	0.046 J	0.051 J	0.029 J	1 U	0.5 U	0.5 U	0.5 U	0.03 J	0.059 J
Dissolved Metals															
Arsenic	ug/L	--	900	9000	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	ug/L	--	50000	100000	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	ug/L	--	4	50	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	ug/L	--	300	3000	NA	20 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	ug/L	--	10	150	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	ug/L	--	20	200	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	ug/L	--	100	1000	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	ug/L	--	7	1000	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs															
Aroclor 1016	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1221	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1232	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1242	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1248	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1254	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1260	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1262	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor 1268	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
Aroclor, Total	ug/L	5	10	100	NA	NA	0.5 UJ	0.5 UJ	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
General Chemistry															
Cyanide	ug/L	--	30	2000	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	NA	NA
Cyanide (PAC)	ug/L	--	--	--	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	NA	NA

Red Shading - UCL Exceeded; Black Shading - Method 1 Std Exceeded; Bold - Detected; U - Not Detected;
J - Estimated; R - Rejected; NA - Not Analyzed

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix E

Laboratory Data Reports – Soil

(Due to file size limitations, the lab data reports were submitted to
MassDEP separately on CD with the attached BWSC125)



NOTIFICATION OF A NON-EDEP ELECTRONIC SUBMITTAL

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0015 (7) and 310 CMR 40.0009

A. SITE LOCATION:

- 1. Site Name: Tombarello and Sons Inc Hofman Ave
- 2. Street Address: 207 Marston Street
- 3. City/Town: Lawrence 4. ZIP Code: 01841-0000

B. THIS FORM IS BEING USED TO:

- 1. Make a BWSC non-eDEP Electronic Submittal (check one and fill out Sections C, D, F, and G):
 - a. The Person Making the Submittal does not have internet access, and/or will not authorize anyone that has internet access to sign electronically on their behalf. (Section F must be signed by the Person Making the Submittal)
 - b. Due to an eDEP problem, I was unable to make an eDEP submittal for this transaction. (Attach email from BWSC.eDEP@state.ma.us)

Describe Problem: _____
- 2. Submit supporting Documentation on CD (check one and fill out Sections C, E, and G):
 - a. I did not upload the supporting documentation for the submittal made in eDEP. The supporting documentation is greater than 30 mb. The supporting documentation, except for Appendix E - Soil Lab Data Reports, were uploaded and submitted through eDEP. Only Appendix E is being submitted on CD.
 - b. I was unable to upload the supporting documentation. The supporting documentation is less than 30 mb. (Attach email from BWSC.eDEP @state.ma.us.)

Describe Problem: _____

C. BWSC TRANSMITTAL FORM SUBMITTED: (check one)

- | | |
|--|--|
| <input type="checkbox"/> 1. BWSC50 Application for Special Project Designation | <input type="checkbox"/> 8. BWSC111 Audit Plan & Post Audit Completion Statement |
| <input type="checkbox"/> 2. BWSC103 Release Notification and Retraction Form | <input type="checkbox"/> 9. BWSC112 Bill of Lading |
| <input type="checkbox"/> 3. BWSC104 Permanent or Temporary Solution Statement Transmittal Form | <input type="checkbox"/> 10. BWSC113 Activity and Use Limitation(AUL) Form |
| <input type="checkbox"/> 4. BWSC105 Immediate Response Action Transmittal Form | <input type="checkbox"/> 11. BWSC115 Downgradient Property Status Form |
| <input type="checkbox"/> 5. BWSC106 Release Abatement Measure Transmittal Form | <input type="checkbox"/> 12. BWSC119 URAM Transmittal Form |
| <input type="checkbox"/> 6. BWSC107 Tier Classification Transmittal Form | <input type="checkbox"/> 13. BWSC120 Homeowner Certification Transmittal Form |
| <input checked="" type="checkbox"/> 7. BWSC108 CRA Transmittal Form & Phase I CS | <input type="checkbox"/> 14. BWSC121 Notif. of Delay in Response Deadlines |

D. NON-EDEP ELECTRONIC SUBMITTAL CHECKLIST:

- 1. Fill out Transmittal Form specified in Section C in eDEP, error check, and print completed form on paper.
- 2. Have Person Making Submittal sign the Transmittal Form specified in Section C in ink; LSP sign in ink.
- 3. Scan completed signed form, and put on CD with all required supporting documentation. Submittal does not meet the requirements of 310 CMR 40.0015(7) unless the complete package is on the CD.
- 4. Submit this completed BWSC125 Notification of Non-eDEP Electronic Submittal Form, the original signed Transmittal Form and a CD containing a scanned copy of the transmittal form and all required supporting documentation. The CD and attached documents must be submitted to the regional office either by hand, or by regular or certified mail, before applicable deadline.



NOTIFICATION OF A NON-EDEP ELECTRONIC SUBMITTAL

Release Tracking Number

3 - 18126

Pursuant to 310 CMR 40.0015 (7) and 310 CMR 40.0009

E. SUPPORTING DOCUMENTATION ON CD CHECKLIST:

- 1. Complete and Submit in eDEP, Transmittal Form specified in Section C.
- 2. Submit CD to applicable regional office with this completed BWSC125 Notification of Non-eDEP Electronic Submittal Form along with a printed receipt of the eDEP Transaction. The CD and attached documents must be postmarked or delivered by hand the next business day.
- 3. Specify eDEP Transaction ID: 1195308

F. SIGNATURE OF PERSON MAKING SUBMITTAL : (required if B1 is checked)

1. First Name: _____ 2. Last Name: _____
3. Title: _____ 4. Date: _____ (mm/dd/yyyy)
5. Signature: _____

G. SIGNATURE OF LSP OR AUTHORIZED AGENT OF LSP:

1. First Name: _____ 2. Last Name: _____
3. Title: _____ 4. Date: _____ (mm/dd/yyyy)
5. Signature: _____

Date Stamp (DEP USE ONLY:)



MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix F

Boring and Monitoring Well Logs



Credere Associates, LLC
 776 Main Street
 Westbrook, Maine 04092
 Phone: 207-828-1272
 Fax: 207-887-1051

Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 5.5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.5 feet bgs.

CREDERE ENV. 2015 - GINT STD US LAB.GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/32		0.01			0-3" Brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.05	A-05 (1-2)		3-7" Brown, fine to coarse SAND, trace Silt. Dry.	
			0.01	A-05 (2-3)		7-27" Brown, fine to coarse SAND, little Brick, Grass, trace fine gravel (fill). Dry.	
2.5			0.02	A-05 (3-4)		27-32" Black/brown, fine to coarse SAND, trace Brick, Glass, Metal (fill). Moist.	
			0.05	A-05 (4-5)			
5.0	60/24		0.01			0-11" SAA. Wet at 6".	
			0.01			11-24" Dark gray/black, very fine to fine SAND, some Silt. Wet	
7.5			0.00	A-05 (5-7)			
			0.00				
			0.01				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



Credere Associates, LLC
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 Westbrook, Maine 04092
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 Fax: 207-887-1051

Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 5
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 3/23/20 16:01 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/36		0.04			0-4" Dark brown, fine to course SAND, trace Silt, Grass, Dry.	
			0.05	A-06 (1-2)		4-25" Black, brown, and orange fine to course SAND, little Silt, Glass, Metal, Brick, Rubber (fill) Moist.	
			0.06	A-06 (2-3)		25-40" Brown, very fine to fine SAND, some Silt, Moist	
2.5			0.40	A-06 (3-5)			
			0.06				
5.0	60/24		0.38			0-15" SAA, Wet.	
			0.10			15-20" Gray, SAA, Wet.	
			0.93	A-06 (5-7)		20-28" Light brown, fine to course SAND, some Silt, trace fine Gravel, Wet.	
7.5			0.26			28-40" Light brown, very fine to fine SAND, little Silt, Wet.	
			0.64				
10.0						End of boring at 10ft bgs (no refusal).	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 1.75 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 1.75 feet bgs.

CREDERRE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/24		0.08			0-2" Brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.06	A-07 (1-2)		2-6" Brown, fine to coarse SAND, trace Silt. Dry.	
			0.06	A-07 (2-3)		6-10" Light Brown, very fine to medium SAND. Dry.	
2.5			0.09	A-07 (3-4)		10-24" Dark brown/black, very fine to coarse SAND, little Silt, Glass, Metal, Rubber, Wood debris (fill). Moist (wet at 21").	
			0.07	A-07 (4-5)			
5.0	60/26		0.06			0-6" Brown, very fine to coarse SAND. Dry.	
			0.05			6-26" Black/dark brown, very fine to fine SAND and SILT, some Glass, Metal, Rubber, Fabric, Wood (fill). Wet.	
			0.05	A-07 (5-7)			
7.5			0.09				
			0.12				
10.0						End of boring at 10ft bgs (no refusal).	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 8.33 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 8.33 feet bgs.

CREDERE ENV. 2015 - GINT STD US LAB.GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/39		0.21			0-3" Dark brown, fine to coarse SAND, little Silt, Grass. Moist	
			0.09	B-04 (1-2)		3-5" Dark brown/brown, fine to coarse SAND, trace Coal. Moist	
						5-9" Gray, coarse GRAVEL. Moist.	
						9-18" Dark brown, very fine SAND, little Silt. Moist	
			0.09	B-04 (2-3)		18-22" Light brown, very fine to medium SAND, trace fine Gravel. Moist.	
						22-26" Brown, fine to coarse SAND, little Silt. Moist	
2.5			0.08	B-04 (3-4)		26-39" Dark brown/brown, very fine to fine SAND, little Silt. Moist.	
			0.08	B-04 (4-5)			
5.0	60/43		0.08			0-16" SAA.	
			0.15			16-22" Black, very fine to fine SAND, some Silt. Moist	
			0.08	B-04 (5-7)		22-34" Gray, very fine to fine SAND, little Silt. Moist	
7.5			0.07			34-40" Light brown, fine SAND, trace Silt. Moist	
			0.08			40-43" Light brown, fine to medium SAND. Wet.	
10.0						End of Boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/20 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 7
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 3/23/20 16:01 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/38		0.28			0-13" Light brown, very fine to medium SAND, Dry.	
			0.13	B-05 (1-2)		13-36" Black, brown, and orange, fine to coarse SAND, trace Silt, little Glass, Metal, Coal (fill) Moist.	
			0.29	B-05 (1-3)			
			0.11	B-05 (2-3)			
2.5			0.11	B-05 (3-5)-1		0-8" Black, SAA, Moist.	
			0.12	B-05 (3-5)-2			
5.0	60/40		0.05			8-18" Dark gray, very fine to fine SAND, trace Silt, Moist.	
			0.06			18-22" Black, very fine to fine SAND, some Silt, Moist. 22-24" Dark gray, very fine to fine SAND, trace Silt, Wet.	
			0.06	B-05 (5-7)			
			0.87				
			0.32				
10.0						End of boring at 10ft bgs (no refusal).	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 3 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 3 feet bgs.

CREDERE ENV. 2015 - GINT STD US LAB.GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/42		0.13			0-2" Dark brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.17	B-07 (1-2)		2-8" Dark brown, fine to coarse SAND, trace Gravel, Silt. Dry.	
			0.12	B-07 (2-3)		8-21" Brown, very fine to coarse SAND, little Silt, trace fine Gravel. Moist.	
2.5			0.12	B-07 (3-4)		21-42" Brown, very fine to fine SAND, little Silt, Brick at 3.5ft bgs (fill). Moist (wet at 36").	
			0.12	B-07 (4-5)		0-2" Gray, very fine to fine SAND, little Silt. Wet.	
5.0	60/49		0.13			2-8" Black, fine to medium SAND, trace glass, little Silt. Wet.	
			0.14			8-12" Brown, very fine to fine SAND, little Silt. Wet.	
			0.14	B-07 (5-7)		12-30" Black/dark gray, very fine to fine SAND, some Silt. Wet.	
7.5			0.16			30-35" Dark gray, fine GRAVEL, some very fine to fine Sand. Wet.	
						35-37" Orange, fine to coarse SAND. little Silt. Wet.	
						37-49" Light brown, very fine to medium SAND, trace Silt. Wet.	
10.0						End of boring at 10ft bgs (no refusal)	
12.5							



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Boring Log

B-07R
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 2 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 2 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/46		0.15			0-2" Dark Brown, fine to coarse SAND, little Silt, Grass. Moist 2-12" Dark brown/black, fine to coarse SAND, little Silt. Dry.	
			0.13	B-07 (1-2)		12-18" Brown, fine to medium SAND, trace Silt. Dry	
			0.18	B-07 (2-3)		18-24" Light brown, very fine to medium SAND, trace Silt. Dry.	
2.5			0.19	B-07 (3-4)		24-46" Black, fine to coarse SAND, some Silt, little Glass, Metal, Rubber, Fabric, Wood (fill). Wet. Coal observed in sample.	
			0.24	B-07 (4-5)			
5.0	60/27		0.39			0-10" SAA.	
			0.25			10-27" Dark brown, very fine to fine SAND, little Silt. Wet.	
			0.21	B-07 (5-7)			
7.5			0.17				
			0.16				
10.0						End of boring 10ft bgs (no refusal).	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/34		0.19			0-2" Dark brown, fine to coarse SAND, little Grass. Dry.	
			0.08	B-08 (1-2)		2-11" Dark brown, fine to coarse SAND. Dry.	
			0.09	B-08 (2-3)		11-25" Light brown/tan, fine to medium SAND, trace Silt. Moist.	
2.5			0.09	B-08 (3-4)		25-34" Brown/orange/black, fine to coarse SAND, little Silt, Grass, Metal, Ash, Rubber (fill). Moist. Coal and Coal Ash observed in sample.	
			0.09	B-08 (4-5)			
5.0	60/36		0.11			0-8" SAA. Wet.	
			0.09			8-16" SAA (except black).	
			0.11	B-08 (5-7)		16-36" Dark gray, very fine to fine SAND, some Silt. Wet.	
			0.11				
			0.08				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

B-09R
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 6.33 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.33 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/41		0.10			0-2" Dark brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.23	B-09 (1-2)		2-14" Dark gray to brown, fine to coarse SAND, trace fine Gravel, Silt. Dry.	
			0.11	B-09 (2-3)		14-41" Brown/orange/black, fine to coarse SAND, little Silt, trace fine Gravel, Glass, Metal, Rubber (fill). Dry. Coal and Coal Ash observed in sample.	
2.5			0.41	B-09 (3-4)			
			0.12	B-09 (4-5)			
5.0	60/25		0.12			0-12" SAA	
			0.14	B-09 (5-7)-1		12-16" Brown, fine to coarse SAND, little glass (fill). Moist.	
			0.10			16-20" Black, very fine to medium SAND, little Glass, little Metal (fill). Wet.	
			0.10	B-09 (5-7)-2		20-25" Black, very fine to fine SAND and SILT. Wet.	
7.5			0.10				
			0.10				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 7.58 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7.58 feet bgs.

CREDERE ENV. 2015 - GINT STD US LAB.GDT - 2/4/20, 16:32 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/27		0.11			0-4" Dark brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.06	C-05 (1-2)		4-22" Brown/light brown, fine to coarse SAND, some Silt, little Brick, little Glass, little Metal (fill). Dry.	
			0.07	C-05 (2-3)		22-27" Dark brown, very fine to fine SAND, trace Silt. Moist.	
2.5			0.07	C-05 (3-4)			
			0.07	C-05 (4-5)			
5.0	60/43		0.05			0-17" Light brown, very fine to fine SAND, trace Silt. Moist.	
			0.05			17-31" Gray, very fine to fine SAND, little Silt. Moist (wet at 24").	
			0.05	C-05 (5-7)			
7.5			0.05			31-42" Dark gray/black, very fine to fine SAND, little Silt, trace Glass, trace Metal (fill). Wet. Coal and Coal Ash observed in sample.	
			0.05			42-43" Light brown, very fine to fine SAND. Wet.	
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 8 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 8 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/36		0.05			0-2" Brown, fine to coarse SAND and GRASS. Dry.	
			0.06	C-06 (1-2)		2-17" Brown, fine to coarse SAND. Dry.	
			0.12	C-06 (2-3)		17-33" Light brown, very fine to fine SAND. 1" of black from 25-26".	
2.5			0.10	C-06 (3-4)		33-36" Brown/orange, fine to coarse SAND, trace fine Gravel, trace Vegetation (grass). Dry.	
			0.08	C-06 (4-5)		36-40" Brown/orange, fine to coarse SAND, little Silt, trace Glass, Metal. Wet.	
5.0	60/48		0.06			40-48" Light brown, fine to medium SAND. Wet.	
			0.06				
			0.06	C-06 (5-7)			
			0.06				
			0.05				
10.0						End of boring 10ft bgs (no refusal).	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/32		0.01			0-2" Dark brown, fine to coarse SAND, little Silt, trace Grass, trace fine Gravel. Dry.	
			0.04	C-07 (1-2)		2-24" Dark brown/brown, fine to coarse SAND, little Silt, trace fine Gravel. Dry.	
			0.12	C-07 (2-3)		24-32" Dark brown, very fine to medium SAND, some Silt, trace fine Gravel. Moist	
2.5			0.07	C-07 (3-4)			
			0.05	C-07 (4-5)			
5.0	60/48		0.05			0-26" Dark gray, fine to coarse SAND. Wet.	
			0.07				
			0.03	C-07 (5-7)		26-44" Dark gray/black, very fine to fine SAND and SILT. Wet.	
7.5			0.04				
			0.05			44-48" Dark gray, fine to coarse SAND. Wet.	
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/32		0.10			0-2" Dark brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.14	C-08 (1-2)		2-6" Brown/gray, fine to coarse SAND. Dry.	
			0.25	C-08 (2-3)		6-10" Dark brown, very fine to coarse SAND. Dry.	
2.5			0.77	C-08 (3-4)		10-32" Black/brown, fine to coarse SAND, trace Silt, trace Glass, trace Metal, trace Rubber (fill). Moist. Coal and Coal Ash observed in sample.	
			0.62	C-08 (4-5)			
5.0	60/36		0.11			0-9" Dark gray, fine to coarse SAND. Wet.	
			0.15			9-30" Dark gray/black, very fine to fine SAND and SILT. Wet.	
			0.36	C-08 (5-7)			
7.5			0.09			30-36" Dark gray/black, very fine to medium SAND, some Silt. Wet	
			0.10				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 5.42 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.42 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/51		0.10			0-3" Dark brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.10	C-09 (1-2)		3-25" Dark brown, fine to coarse SAND, trace Silt, trace Metal, trace Glass. Dry. Coal and Coal Ash observed in sample.	
			0.12	C-09 (2-3)		25-51" Light brown, fine to coarse SAND. Moist	
2.5			0.12	C-09 (3-4)			
			0.10	C-09 (4-5)			
5.0	60/43		0.18			0-5" Dark gray, fine to coarse SAND, trace Silt. Dry.	
			0.22			5-10" Light brown, fine to coarse SAND. Wet.	
			0.98	C-09 (5-7)		10-16" Dark brown, fine to coarse SAND, little Silt, trace Metal, trace Glass (fill). Wet. 16-25" Dark brown/black, fine to coarse SAND, little Silt, trace Metal, trace Glass (fill). 3" of crushed fine to coarse Gravel from 20-23". Wet.	
7.5						25-43" Dark gray, very fine to fine SAND, some Silt. Wet	
			2.10				
			3.10				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 6.5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.5 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		0.15			0-2" Brown, fine to coarse SAND, trace Silt, Grass. Dry.	
			0.14	D-05 (1-2)		2-24" Light brown/brown/dark brown, fine to coarse SAND, trace Silt. Dry.	
			0.14	D-05 (2-3)		24-29" Light brown, very fine to fine SAND. Dry.	
2.5						29-31" Gray, crushed fine to coarse GRAVEL, some Brick (fill). Dry.	
			0.18	D-05 (3-4)		31-35" Light brown, fine to medium SAND, some Wood (fill). Dry.	
			4.55	D-05 (4-5)		35-37" Light brown, very fine to fine SAND, little Silt. Moist. 35-48" Black, very fine to medium SAND, little Glass, trace Metal, trace Rubber (fill). Moist.	
5.0	60/55		0.62			0-3" Light brown, very fine to medium SAND. Moist.	
						3-9" Brown, fine to coarse SAND, trace Silt. Dry.	
			0.17			9-10" Black, very fine to medium SAND, little fibrous material, little Glass (fill). Moist.	
			0.18	D-05 (5-7)		10-32" Dark gray, very fine to fine SAND, little Silt. Wet.	
7.5			0.17			32-55" Light brown/gray, very fine to coarse SAND, little Silt. Wet.	
			0.15				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 8.92 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 8.92 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/39		0.16			0-2" Dark brown, fine to coarse SAND, some Grass, little Silt. Moist. 2-20" Dark brown/black, very fine to fine SAND, little Silt. Moist.	
			0.14	D-06 (1-2)			
			0.14	D-06 (2-3)		20-28" Gray/dark gray, very fine to fine SAND, some Silt. Moist.	
2.5						28-30" Light brown, fine SAND, little Silt, fine Gravel, trace Glass, trace Ceramic (fill). Dry.	
			1.15	D-06 (3-4)		30-35" Black, fine to coarse SAND, little Silt, trace Fibrous Material, trace Glass, trace Brick (fill). Moist.	
			0.68	D-06 (4-5)		35-39" Light brown, fine to coarse SAND, trace Silt (fill). Moist.	
5.0	60/51		1.20			0-6" SAA.	
			0.85			6-38" Dark gray/ brown, very fine to fine SAND, some Silt. Moist.	
			0.65	D-06 (5-7)			
7.5			0.23			38-51" Light brown/brown, very fine to coarse SAND, little Silt. Moist. Wet.	
			0.17				
10.0						End of boring at 10ft bgs (no refusal)	
12.5							



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Boring Log

D-07R
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 5 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		0.13			0-5" Dark brown, fine to coarse SAND, some Grass. Moist.	
			0.14	D-07 (1-2)		5-10" Dark brown, very fine to coarse SAND, little fine Gravel, trace Silt. Moist.	
			0.14	D-07 (2-3)		10-13" BRICK. Dry.	
						13-21" Brown/dark brown, very fine SAND, little fine Gravel, some Silt. Moist.	
						21-28" Dark brown, very fine to fine SAND, some Silt. Moist.	
2.5						28-36" Dark brown/black, very fine to coarse SAND, some Silt, trace fine Gravel. Moist.	
			0.58	D-07 (3-4)		36-42" Gray, very fine to fine SAND, little Silt. Moist.	
			0.28	D-07 (4-5)		42-48" Black, very fine to medium SAND, some Silt, trace coal, trace fine Gravel. Moist.	
5.0	60/25		0.38			0-7" BRICK. Wet.	
			0.23			7-15" Dark gray, medium to very fine SAND, trace Silt. Wet.	
			0.24	D-07 (5-7)		15-17" Dark brown, very fine to fine SAND, some Silt. Wet.	
						17-25" Light brown, very fine to fine SAND, some Silt. Wet.	
7.5			0.18				
			0.17				
10.0						End of boring at 10ft bgs. (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 5.58 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.58 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/40		0.13			0-2" Brown, fine Gravel, some fine Sand, trace Grass. Moist.	
			0.13	D-08 (1-2)		2-26" Dark brown/brown/black, very fine to coarse SAND, little Silt. Dry.	
			0.21	D-08 (2-3)		26-31" Gray/black, fine to medium SAND, some Brick, trace fine Gravel, trace Silt (fill). Moist. Coal observed in sample.	
2.5			0.85	D-08 (3-4)		31-40" Dark brown/black very fine to fine SAND, some Silt. Moist.	
			0.20	D-08 (4-5)			
5.0	60/40		0.18			0-7" SAA. Moist.	
			0.14			7-31" Dark gray fine to coarse SAND, trace Silt. Wet.	
			0.13	D-08 (5-7)			
7.5			0.15			31-40" Dark brown/black very fine to fine SAND and SILT, little Wood. Wet.	
			0.15				
10.0						End of boring 10ft bgs. (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 5.83 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.83 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/45		0.14			0-2" Dark brown/black, fine to coarse SAND, little Grass. Moist. 2-12" Dark brown/black, fine to coarse SAND, trace Silt, Coal. Moist	
			0.19	D-09 (1-2)		12-45" Light brown/orange fine to coarse SAND, some Glass, trace Rubber, trace Metal, trace Ceramic, trace Fabric (fill). Moist.	
			0.13	D-09 (2-3)			
2.5			0.13	D-09 (3-4)			
			0.14	D-09 (4-5)			
5.0	60/36		0.11			0-10" SAA.	
			0.85			10-36" Dark brown/black, very fine to fine SAND, little Silt. Wet.	
			0.27	D-09 (5-7)			
7.5			0.23				
			0.17				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote DEPTH TO WATER 6.58 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.58 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/36		0.07			0-15" Brown, very fine to fine SAND. Dry.	
			0.07	E-02 (1-2)			
			0.08	E-02 (2-3)		15-27" Light brown, very fine to coarse SAND. Dry.	
2.5			0.08	E-02 (3-4)			
			0.07	E-02 (4-5)		27-36" Gray/dark gray, very fine to coarse SAND. Dry.	
5.0	60/43		0.06			0-4" SAA.	
			0.06			4-13" Light brown, fine to medium SAND. Moist.	
			0.07	E-02 (5-7)		13-26" Dark brown/brown, very fine to fine SAND, some Silt. Moist (wet at 19")	
7.5			0.07			26-43" Gray, very fine to fine SAND, little Silt. Wet.	
			0.07				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 6 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/60		0.14			0-5" ASPHALT.	
			0.14	E-05 (1-2)		5-20" Brown/black, fine to coarse SAND, little Silt, trace fine Gravel. Moist.	
			0.17	E-05 (2-3)		20-30" Light brown, very fine to fine SAND, trace Silt. Moist.	
2.5						30-34" Black, fine to coarse SAND, little Coal. Moist.	
			0.43	E-05 (3-4)		34-37" Gray, crushed fine to coarse GRAVEL. Dry.	
						37-41" Dark gray, fine to coarse SAND, trace Silt. Moist.	
			0.24	E-05 (4-5)		41-45" Dark gray, very fine to fine SAND, little Silt. Moist. 45-50" Black, very fine to fine SAND, some Wood, trace Fibrous Material, trace Silt (fill). Moist.	
5.0	60/51		0.32			50-60" Brown/orange, very fine to fine SAND and SILT (sticky, smells like pine). Moist.	
			0.34			0-12" Black/dark gray, fine to coarse SAND, little Silt, trace Rubber. Moist.	
			0.17	E-05 (5-7)		12-48" Dark brown/light brown, very fine to fine SAND, some Silt. Wet.	
7.5			0.19			48-51" Light brown, fine to coarse SAND, little Silt. Wet.	
			0.15				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 7 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/44		0.13			0-7" ASPHALT.	
			0.30	E-06 (1-2)		7-14" Brown, fine to coarse SAND, trace Silt. Dry.	
			0.34	E-06 (2-3)		14-17" Gray, crushed fine to coarse GRAVEL. Dry.	
						17-23" Brown, fine to coarse SAND, little Gravel, trace Silt. Dry.	
						23-28" Brown/black, fine to coarse SAND. Dry. Coal observed in sample.	
2.5			0.54	E-06 (3-4)		28-34" Gray, fine to coarse SAND, little Silt, trace fine Gravel. Dry.	
			2.10	E-06 (4-5)		34-44" Black fine to coarse SAND, little Coal, trace Glass, trace Fibrous Material (fill). Moist. Coal observed in sample.	
5.0	60/30		6.33			0-6" SAA	
			1.69	E-06 (5-7)-1		6-30" Light brown very fine to fine SAND, some Silt, trace fine Gravel. Moist to Wet at 7ft bgs.	
			0.39	E-06 (5-7)-2			
7.5			0.24				
			0.21				
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 8.67 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 8.67 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		0.10			0-2" Brown, fine to coarse SAND. Dry.	
			0.17	E-07 (1-2)		2-10" Brown, fine to coarse SAND, trace Silt. Dry.	
			0.17	E-07 (2-3)		10-14" Light brown, very fine to medium SAND, trace Silt. Dry.	
						14-25" Black, fine to coarse SAND, some Silt. Dry. Coal observed in sample.	
2.5			0.25	E-07 (3-4)		25-30" Gray, very fine to medium SAND. Dry.	
			0.59	E-07 (4-5)		30-45" Black, very fine to fine SAND, some Silt, little Metal (fill). Moist. Coal observed in sample.	
5.0	60/52		0.13			45-48" Dark brown/black, very fine to fine SAND, some Silt. Moist.	
			0.15			0-8" Black, very fine to fine SAND, some Silt. Moist. Coal observed in sample.	
			0.09	E-07 (5-7)		8-22" Dark brown, very fine to fine SAND, some Silt. Moist.	
7.5			0.10			22-32" Light brown, very fine to fine SAND, some Silt. Moist.	
			0.10			32-52" Brown/dark brown, very fine to medium SAND, some Silt, trace fine Gravel. Moist (wet at 44").	
10.0						End of boring at 10ft bgs (no refusal)	
12.5							



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Boring Log

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote DEPTH TO WATER 8.08 DIAMETER NA
 CONTRACTOR Geosearch, Inc./Brian Houle WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 8.08 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/47		0.12			0-2" Dark brown, fine to coarse SAND, some grass. Moist.	
			0.14	E-08 (1-2)		2-7" Dark brown/black, very fine to medium SAND, little fine Gravel. Moist.	
						7-18" Dark brown/black, very fine to fine SAND, some Silt, little metal. Moist.	
			0.19	E-08 (2-3)		18-22" Gray, crushed fine to coarse GRAVEL. Dry.	
						22-27" Dark gray, very fine to coarse SAND, some Silt. Moist.	
2.5			0.50	E-08 (3-4)		27-41" Black/dark brown, very fine to fine SAND, some Silt, trace Leaves, trace Wood, trace Glass. Moist.	
			0.19	E-08 (4-5)		41-47" Black/Dark brown, very fine to fine SAND and SILT. Wet.	
5.0	60/55		0.26			0-10" Black, very fine to fine SAND and SILT. Moist.	
			0.13			10-37" Brown/gray, very fine to fine SAND, some Silt. Moist.	
			0.13	E-08 (5-7)		37-52" Light brown, very fine to fine SAND, some Silt. Wet.	
			0.11			52-55" Brown/orange, very fine to coarse SAND, little Silt. Wet.	
10.0						End of boring 10ft bgs (no refusal)	
12.5							



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Boring Log

SB-1
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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/5/19 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 6.5
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.5 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/38		0.35			0-7" ASPHALT.	
				SB-1 (0-0.5)		7-11" Brown, fine to coarse SAND. Dry.	
			0.09			11-26" Dark brown/gray, fine to coarse SAND, some Silt. Moist.	
				SB-1 (1-2)			
			0.09			26-38" Black/orange/brown, fine to coarse SAND, some Fibrous Material, some Glass (fill). Moist. Coal and Coal Ash observed in sample.	
				SB-1 (2-3)			
2.5			0.09				
				SB-1 (3-5)			
			0.06				
5.0	60/32		0.07			0-24" SAA. Wet at 18".	
				SB-1 (5-7)-1			
			0.06				
				SB-1 (5-7)-2			
			0.06			24-28" Dark gray, fine to coarse SAND, trace fine Gravel. Wet.	
						28-32" Dark gray, very fine to medium SAND. Wet.	
			0.06				
			0.08				
10.0						End of boring at 10 feet bgs (no refusal).	
						Note: The 0-0.5 foot sample was collected immediately beneath the asphalt surface. The reported depth of any subsequent samples was measured from the surface.	
12.5							



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Boring Log

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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 7.5
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7.5 feet bgs.

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/44		0.09	SB-2 (0-0.5)		0-10" ASPHALT.	
			0.10	SB-2 (1-2)		10-12" Light brown, very fine to fine SAND, trace fine Gravel. Moist. 12-32" Dark brown, fine to coarse SAND, little Silt, trace Glass, trace Brick, layer of brick from 21-22" (fill). Dry.	
2.5			0.04	SB-2 (2-3)		32-39" Brown, very fine to fine SAND. Moist.	
			0.00	SB-2 (3-5)		39-44" Dark brown, fine to coarse SAND, little Silt, trace Glass, trace Brick (fill). Moist.	
5.0	60/40		0.07	SB-2 (5-7)-1		0-30" SAA.	
			0.08	SB-2 (5-7)-2			
			0.31				
7.5			0.03			30-40" Light brown, very fine to fine SAND, little Silt. Wet.	
			0.07				
10.0						End of boring at 10 feet bgs (no refusal)	
						Note: The 0-0.5 foot sample was collected immediately beneath the asphalt surface. The reported depth of any subsequent samples was measured from the surface.	
12.5							

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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 7
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7 feet bgs.

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		0.21	SB-3 (0-0.5)		0-10" ASPHALT.	
			0.00	SB-3 (1-2)		10-44" Brown, very fine to medium SAND, trace Silt, brick observed at 20". Moist.	
2.5			0.03	SB-3 (2-3)			
			0.02				
			0.01	SB-3 (3-5)		44-48" Dark brown/black, fine to coarse SAND, little Silt, trace Glass, trace Brick (fill). Moist.	
5.0	60/53		0.07			0-14" SAA.	
			0.25	SB-3 (5-7)-1			
				SB-3 (5-7)-2		14-53" Brown, very fine to fine SAND, some Silt. Moist (wet at 7' bgs).	
			0.44				
7.5			0.91				
			0.12				
10.0						End of boring at 10 feet bgs (no refusal)	
						Note: The 0-0.5 foot sample was collected immediately beneath the asphalt surface. The reported depth of any subsequent samples was measured from the surface.	
12.5							

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Boring Log

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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 9/4/19 LOGGED BY Samantha Foote
 CONTRACTOR Geosearch, Inc./Brian Houle DEPTH TO WATER 7.08
 DRILLING METHOD Direct Push SAMPLER TYPE, DIAMETER NA, 1.5"
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig HAMMER WEIGHT _____
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 7.08 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/36		0.00			0-10" ASPHALT.	
			0.00	SB-4 (0-0.5)			
						10-12" Brown/dark brown, very fine to medium SAND, little Silt. Moist.	
				SB-4 (1-2)		12-20" Gray, crushed fine to coarse GRAVEL/CONCRETE. Dry.	
			0.03			20-28" Dark brown/black, fine to coarse SAND, trace Silt. Moist.	
2.5				SB-4 (2-3)		28-32" Blue/black fine GRAVEL, some crushed fine to coarse Gravel. Dry.	
			0.00			32-36" Light gray/tan, fine to coarse SAND, little Silt, fill materials throughout including glass/brick. Moist.	
			0.00	SB-4 (3-5)			
5.0	60/45		0.00			0-25" Same as above.	
			0.00	SB-4 (5-7)-1			
			0.00	SB-4 (5-7)-2			
			0.00			25-30" Brown with orange staining, very fine to medium SAND, trace Silt. Wet at 7.08 feet bgs.	
7.5			0.00			30-33" Light brown, fine to coarse SAND. Wet.	
			0.00			33-45" Dark gray very fine to fine SAND, some Silt. Wet.	
10.0			0.00			End of boring at 10 feet bgs (no refusal)	
						Note: The 0-0.5 foot sample was collected immediately beneath the asphalt surface. The reported depth of any subsequent samples was measured from the surface.	
12.5							



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 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 6.58 DIAMETER 2
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS PVC, 0.010" slotted screen, solid riser
 DRILLING METHOD Direct Push ANNULUS MATERIALS #2 Silica Sand Bentonite Grout
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.58 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		<1.0			0-11" ASPHALT.	Well Finish: Road Box (Flush) Concrete
						11-30" Dark Brown/gray, fine to coarse SAND, some Silt, trace fine Gravel. Moist.	Backfill (#2 Sand)
2.5						30-37" BRICK (fill). Dry.	Bentonite Seal
						37-48" Dark brown very fine to fine SAND, some Silt, trace fine Gravel (fill). Moist.	
5.0	36/27		<1.0			0-19" SAA.	Backfill (#2 Sand)
						19-27" Light brown, very fine to fine SAND, some Silt, little fine Gravel. Wet.	
7.5							Screen (3-13' bgs) 2" Schedule 40 PVC
10.0						0-36" SAA.	
12.5							
						End of boring at 13 feet bgs (no refusal)	



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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.58 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.58 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/37		<1.0			0-4" ASPHALT.	
2.5						4-19" Dark brown, very fine to fine SAND, some Silt, trace fine Gravel (fill). Moist. Coal observed in sample. 19-29" Black, very fine to fine SAND, some Silt. Dry. Coal observed in sample.	
5.0	48/40		<1.0	SB-6		29-37" Light brown, fine SAND and SILT. 0-9" Dark brown, very fine to fine SAND, some Silt, trace fine Gravel, trace Brick (fill). Moist. Coal Ash observed in sample. 9-30" Light brown, very fine to fine SAND, some Silt, trace fine Gravel (fill). Wet. Coal and Coal Ash observed in sample.	
7.5						30-40" Dark brown, very fine to fine SAND, some Silt. Wet.	
10.0						End of Boring at 9 feet bgs (no refusal)	
12.5							



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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 3.17 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 3.17 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/46		<1.0			0-8" ASPHALT.	
2.5						8-24" Dark brown, very fine to fine SAND, some fine Gravel, trace Silt (fill). Moist. Coal and Clinker observed in sample. 24-28" Brick. Dry. 28-38" Dark brown, very fine to fine SAND, some fine Gravel, trace Silt (fill). Moist. Coal and Coal Ash observed in sample. 38-46" Dark brown, very fine to fine SAND (fill). Wet. Coal and Coal Ash observed in sample.	
5.0	24/14		<1.0	SB-7		0-6" SAA. 6-14" Light Brown, fine SAND and SILT. Wet.	
7.5						End of boring at 7 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

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 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.75 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.75 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/37		<1.0			0-5" TOPSOIL. 5-11" ASPHALT.	
						11-18" Tan, very fine to fine SAND, little Silt. Moist.	
						18-37" Dark brown, very fine to fine SAND, some Silt, trace fine Gravel, trace Brick (fill). Moist. Coal observed in sample.	
2.5							
5.0	48/48		<1.0	SB-8		0-9" SAA. 9-29" Light brown, very fine to fine SAND, some Silt (fill). Wet. Coal observed in Samples.	
7.5						29-43" Tan, fine to coarse, SAND, some Silt. Wet.	
						End of boring at 9 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.75 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.75 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/41		<1.0			0-4" ASPHALT.	
						4-10" Gray, fine GRAVEL, some tan fine Sand, trace Silt. Dry.	
						10-33" Dark brown very fine to fine SAND, little Silt, trace Gravel. Moist.	
2.5						33-35" SAA. 35-41" Dark brown, very fine to fine SAND, little Silt, trace fine Gravel (fill). Moist. Coal and Ash observed in sample.	
5.0	24/24		<.10	SB-9		0-9" Dark brown/gray, very fine to fine SAND, some Silt, little fine Gravel (fill). Wet. Coal and Ash observed in sample.	
						9-24" Light brown, very fine to fine SAND, some Silt. Wet.	
7.5						End of boring at 7 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 6.33 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.33 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/42		<1.0			0-7" ASPHALT.	
2.5						7-17" Dark brown, very fine to fine SAND. Moist. 17-37" Tan, very fine to fine SAND, some Silt, trace fine gravel (fill). Moist. Coal, Ash, and Clinker observed in sample. 37-42" BRICK.	
5.0	48/43		<1.0	SB-10		0-16" Dark brown, very fine to fine SAND, some Silt, little fine Gravel. Moist. 16-43" Dark brown/tan fine SAND (fill). Wet. Coal and Ash observed in sample.	
7.5							
10.0						End of boring at 9 feet bgs (no refusal)	
12.5							



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CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 6.17 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 6.17 feet bgs.

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Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/43		<1.0			0-6" ASPHALT.	
				SB-11 (1-1.5)		6-20" Dark brown, very fine to fine SAND, little fine Gravel (fill). Moist. Coal and Ash observed in sample.	
				SB-11 (2-3)		20-23" QUARTZ.	
2.5				SB-11 (3-4)		23-33" Dark brown, very fine to fine SAND, some Silt, little fine Gravel. Moist.	
				SB-11 (4-5)		33-43" Tan, very fine to medium SAND, little Silt. Moist.	
5.0	36/31		<1.0	SB-11 (5-7)		0-10" Dark brown, very fine to fine SAND, some fine Gravel, little Silt. Moist. 10-14" Dark brown, very fine to fine SAND, some fine Gravel. Moist. 14-24" Light brown, fine SAND, little Silt, trace fine Gravel. Wet. 24-31" Light brown, coarse SAND, little Silt. Wet.	
7.5						End of boring at 8 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

SB-12
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.5 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.5 feet bgs.

CREDERE ENV. 2015 - GINT STD US LAB.GDT - 2/4/20, 16:33 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/40		<1.0			0-3" TOPSOIL. 3-7" ASPHALT.	Well Finish:
2.5				SB-12 (1-1.5)		7-17" Dark brown, very fine to fine SAND, some Silt, little fine Gravel. Moist. 17-19" Tan, very fine SAND and SILT. Moist. 19-35" Dark brown, very fine to fine SAND and SILT (fill). Moist. Coal and Ash observed in sample.	No well installed
				SB-12 (2-3)		35-40" Light brown, very fine to fine SAND, some Silt (fill). Moist. Coal and Ash observed in sample.	
				SB-12 (3-5)			
				SB-12 (4-5)			
5.0	24/22		<1.0	SB-12 (5-7)		0-6" Dark brown, very fine to fine SAND and SILT (fill). Moist. Coal and Ash observed in sample. 6-22" Dark brown, fine to coarse SAND and SILT, some fine gravel. Wet.	
7.5						End of boring 7 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

SB-13
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.25 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.25 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:33 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/36		<1.0			0-5" ASPHALT.	Well Finish:
				SB-13 (1-1.5)		5-14" Dark brown, fine to coarse SAND, some Silt, trace fine Gavel. Dry.	No Well Installed
						14-16" Tan, very fine to medium SAND, little Silt. Moist.	
						16-19" Dark brown, fine to medium SAND, some Silt. Moist.	
						19-21" BRICK.	
						21-36" Dark brown, coarse to medium SAND, little Silt. Moist.	
2.5				SB-13 (2-3)			
				SB-13 (3-4)			
				SB-13 (4-5)			
5.0	24/11		<1.0			0-3" SAA (except wet). 3-11" Dark brown, very fine to fine SAND, some Silt, little fine Gravel. Wet.	
				SB-13 (5-7)			
7.5						End of boring at 7 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

SB-14
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5 feet bgs.

CREDERE ENV 2015 - GINT STD US LAB.GDT - 2/4/20, 16:33 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/48		<1.0			0-6" ASPHALT.	Well Finish: No well installed
				SB-14 (1-1.5)		6-24" Dark brown/brown, fine to coarse SAND, some fine Gravel (fill). Dry.	
				SB-14 (2-3)		24-30" Tan fine SAND, some Silt (fill). Dry.	
2.5				SB-14 (3-4)		30-48" Dark brown, fine SAND, trace Silt, fine Gravel. Moist.	
				SB-14 (4-5)			
5.0	24/19		<1.0			0-19" Dark brown fine SAND, some Silt, trace fine Gravel (fill). Wet. Coal and Ash observed in sample.	
				SB-14 (5-7)			
7.5						End of boring at 7 feet bgs (no refusal)	
10.0							
12.5							



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Boring Log

SB-15
 PAGE 1 OF 1

CLIENT MVPC PROJECT NAME Tombarello
 PROJECT # 17001426 PROJECT LOCATION Lawrence, MA
 DATE STARTED 12/23/19 LOGGED BY Christopher Beahm DEPTH TO WATER 5.75 DIAMETER NA
 CONTRACTOR Technical Drilling Services/Darwin Neuton WELL MATERIALS NA
 DRILLING METHOD Direct Push ANNULUS MATERIALS NA
 DRILLING EQUIPMENT Geoprobe 6610 DT Track Rig TOC ELEVATION _____ GROUND ELEVATION NA
 NOTES bgs= Below ground surface; SAA= Same as above; groundwater encountered at 5.75 feet bgs.

CREDERE ENV. 2015 - GINT STD. US LAB. GDT - 2/4/20, 16:33 - P:\17001426 MVPC ASSESSMENT\WORK\TOMBARELLO SITE-LAWRENCE\FIELD\TOMBARELLO_LOGS.GPJ

Depth (ft)	Penetration/ Recovery (in)	Blow Counts	Field Screening (ppm)	Lab Analytical Sample	Graphic Log	LITHOLOGY	WELL DIAGRAM
0.0	60/41		<1.0			0-2" ASPHALT. 2-23" Dark brown very fine to fine SAND, little fine Gravel (fill). Moist. Coal and Ash observed in sample.	Well Finish:
2.5				SB-15 (1-1.5)		23-25" BRICK. 25-35" Tan, fine to coarse SAND, little Silt. Moist.	No well installed
				SB-15 (2-3)			
				SB-15 (3-4)		35-41" Dark brown, very fine to fine SAND, some Silt. Moist.	
				SB-15 (4-5)			
5.0	24/15		<1.0			0-9" Dark brown, very fine to fine SAND, some Silt. Moist. 9-15" Light brown, fine SAND, some Silt. Wet.	
				SB-15 (5-7)			
7.5						End of boring at 7 feet bgs (no refusal)	
10.0							
12.5							

BORING INFORMATION		BORING CD-34EE
LOCATION: <u>West of Former Furnace Building</u>		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>John, Tyler</u>	
LOGGED BY: <u>C.Saledas</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/42	NA		FILL	S1: (0-0.8"): ASPHALT
	5					4.4ppm 5.3ppm 123.2ppm 12.8ppm		S1: (8-24"): NARROWLY GRADED SAND WITH GRAVEL; ~75% medium sand, ~20% subangular gravel up to 2", ~5% silt. Brown, some red-orange soil. Burnt coal fragments. S1: (24-38"): NARROWLY GRADED SAND WITH GRAVEL; ~80% fine sand, ~15% subrounded/subangular gravel up to 2.5", ~5% silt. Gray, brick fragments. S1: (38-42"): WIDELY GRADED SAND WITH GRAVEL; ~80% sand, ~15% subangular gravel up to 0.75", ~5% silt. Black, coal tar fragments and odor. S2: (0-4"): Similar to S1 (3.2-3.5'). S2: (4-8"): NARROWLY GRADED SAND WITH SILT; ~90% fine sand, ~10% silt. Tan.
		S2	4 to 7	36/12	NA		SAND	S2: (4-8"): NARROWLY GRADED SAND WITH SILT; ~90% fine sand, ~10% silt. Tan.
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: CD-34EE(0-0.5) @ 1430, CD-34EE(1-2) @ 1432, CD-34EE(2-3) @ 1434, CD-34E(3-5) @ 1436, CD-34E(5-7) @ 1438.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION

LOCATION: West of Former Furnace Building
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/1/2019 - 8/1/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 7.0 DRILLER NAME: John, Tyler
 LOGGED BY: C.Saledas RIG TYPE: Geoprobe 6620DT

**BORING
CD-34E-GEI**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch/ 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/45	NA		FILL	S1: (0-8"): ASPHALT S1: (8-32"): WIDELY GRADED SAND WITH GRAVEL; 70% sand, ~25% subrounded/subangular gravel up to 2.5", ~5% silt. Gray-brown, brick fragments. S1: (32-45"): NARROWLY GRADED SAND; ~85% fine to medium sand, ~10% subrounded gravel up to 1", ~5% silt. Brick, glass, and wood fragments. Coal tar/diesel odor. S2: (0-7"): Similar to S1 (32-45").
	5	S2	4 to 7	36/23	NA	7.8ppm 72.4ppm 89.8ppm	SAND	S2: (7-23"): NARROWLY GRADED SAND WITH SILT; ~90% fine sand, ~10% silt. Gray-light brown.
	10					7.9ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES:
 CD-34E(3-5) @ 1405, CD-34E(5-7) @ 1410.

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION		BORING CD-34EN
LOCATION: <u>West of Former Furnace Building</u>		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>John, Tyler</u>	
LOGGED BY: <u>C.Saledas</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/43	NA	8.5ppm	FILL	S1: (0-6"): ASPHALT
	5	S2	4 to 7	36/36	NA	1808ppm		S1: (6-13"): WIDELY GRADED SAND WITH GRAVEL; ~80% sand, ~15% subrounded/subangular gravel up to 2", ~ 5% silt. Orange-brown to gray. Small asphalt fragments, petroleum odor.
						108.31ppm		S1: (13-29"): WIDELY GRADED SAND WITH GRAVEL; ~70% sand, ~25% subrounded/subangular gravel up to 2.5", ~5% silt. Burnt coal and brick fragments.
						1523ppm	SAND	S1: (29-43"): ORGANIC MATERIAL; Wood and leaf debris, some fine narrowly graded sand, glass fragments.
						264ppm		S2: (0-10"): NARROWLY GRADED SAND WITH SILT; ~80% fine sand, ~10% silt, ~10% subrounded gravel up to 0.5". Brown/black. Organics and glass fragments. Petroleum odor.
	10							S2: (10-36"): NARROWLY GRADED SAND WITH SILT; ~90% fine sand, ~10% silt. gray, slightly damp. Petroleum streaking on side of core sleeve. Slight petroleum odor.
	15							Bottom of boring at depth 7 ft.
	20							

<p>NOTES: CD-34EN(0-0.5) @ 1240, CD-34EN(1-2) @ 1245, CD-34EN(2-3) @ 1250, CD-34EN(3-5) @ 1255, CD-34EN(5-7) @ 1300.</p>	<p>PROJECT NAME: Former Tombarello Site</p> <p>CITY/STATE: Lawrence, Massachusetts</p> <p>GEI PROJECT NUMBER: 1802441</p>
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING CD-34ES
LOCATION: <u>West of Former Furnace Building</u>		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>John, Tyler</u>	
LOGGED BY: <u>C.Saledas</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 4	48/48	NA	6.8ppm	FILL	S1: (0-14"): NARROWLY GRADED SAND WITH GRAVEL; ~70% medium sand, ~25% subrounded/subangular gravel up to 1", ~5 silt. Red-brown. S1:(14-28"): WIDELY GRADED SAND WITH GRAVEL; ~80% sand, ~15% subangular gravel up to 3", ~5% silt, light brown to black. Brick and coal tar fragments. Coal tar/diesel odor. S1: (28-48"): NARROWLY GRADED SAND; ~85% sand, ~10% subrounded gravel up to 1", ~5% silt. Black. Brick and burnt coal fragments. Coal tar/diesel odor. S2: (0-15"): Similar to S1 (28-48").
		S2	4 to 7	36/30	NA			
						42.1ppm		S2: (15-30"): NARROWLY GRADED SAND; ~90% fine sand, ~10% silt. Tan to black. Slight coal tar/diesel odor.
	10					4.6ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: CD-34ES(0-0.5) @ 1510, CD-34ES(1-2) @ 1505, CD-34(2-3) @ 1500, FD-07 @ 1500, CD-34ES(3-5) @ 1515, CD-34ES(5-7) @ 1520.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING CD-34EW
LOCATION: <u>West of Former Furnace Building</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
VERTICAL DATUM: <u>NA</u>	DRILLER NAME: <u>John, Tyler</u>	
TOTAL DEPTH (ft): <u>7.0</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	
LOGGED BY: <u>C.Saledas</u>		PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/46	NA		FILL	S1: (0-8"): ASPHALT
	5	S2	4 to 7	36/36	NA	1.4ppm 1.8ppm 0.3ppm 9.8ppm 15.1ppm	SAND	S1: (8-20"): WIDELY GRADED SAND WITH GRAVEL; ~75% sand, ~20% subrounded gravel up to 0.5", ~5% silt. Brown. Brick fragments. S1: (20-32"): NARROWLY GRADED SAND WITH GRAVEL; ~80% medium to fine sand, ~15% subrounded gravel up to 0.75", ~5% silt. Brown to black. Slight diesel odor. S1: (32-38"): WIDELY GRADED SAND WITH GRAVEL; ~65% sand, ~30% subrounded gravel up to 0.5", ~5% silt. White-gray S1: (38-46"): NARROWLY GRADED SAND; ~85% medium sand, ~10% subangular gravel up to 0.5", ~5% silt. Heavy organics. Wood fragments. Slight petroleum odor. S2: (0-8"): NARROWLY GRADED SAND WITH SILT; ~80% fine sand, ~15% silt, ~ 5% subrounded gravel up to 0.5". Black. Wood fragments.
	10					3.5ppm		S2: (8-36"): NARROWLY GRADED SAND WITH SILT; ~90% fine sand, ~10% silt. Gray and damp. Slight organic odor. Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: CD-34EW(0-0.5) @ 1326, CD-34EW(1-2) @ 1328, CD-34EW(2-3) @ 1330, CD-34EW(3-5) @ 1332, CD-34EW(5-7) @ 1334.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION

LOCATION: South of furnace building near property line
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/6/2019 - 8/6/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 7.0 DRILLER NAME: C. Devillers
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

BORING

D-5NS

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch/ 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.1 ppm	FILL	S1: (0-6"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand, 20% subangular gravel, 5% fines. Brown, loose, and dry. TOPSOIL
						0.1 ppm		S1: (6-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel. 5% silt. Dark brown, loose, and moist. Brick, glass, plastic fragments.
						2.5 ppm		
	5	S2	5 to 7	24/NM	NA	11.3 ppm	SAND	S1: (48-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 70% sand with 30% fines. Green/gray, dense, and moist.
						8.8 ppm		S2: (0-24"): Similar to S1 (48-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES:
 D-5NS(0-0.5) @ 1320, D-5NS(1-2) @ 1325, D-5NS(2-3) @ 1330, D-5NS(3-5) @ 1335,
 D-5NS(5-7) @ 1340

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: 10 feet east of EW-06-GEI	
GROUND SURFACE EL. (ft): NA	DATE START/END: 7/31/2019 - 7/31/2019
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach, Tyler
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT
	EW-06E
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 70% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose. Brick fragments.
	5	S2	5 to 7	24/NM	NA		SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (0-30")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

<p>NOTES:</p> <p>* Jar headspace readings not available due to malfunctioning photo-ionization detector.</p> <p>Samples collected: EW06E (0-0.5) @ 1350, EW06E (1-2) @ 1355, EW06E (2-3) @ 1400, EW06E (3-5) @ 1405, EW06E(5-7) @ 1410, FD-04 (5-7) @ 1415.</p>	<p>PROJECT NAME: Former Tombarello Site</p> <p>CITY/STATE: Lawrence, Massachusetts</p> <p>GEI PROJECT NUMBER: 1802441</p>
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GEI WOBURN STD 1-L-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION

LOCATION: Eastern limit of EPA 2018 removal area
 GROUND SURFACE EL. (ft): NA DATE START/END: 7/31/2019 - 7/31/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 7.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

BORING
EW-06-GEI
 PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch/ 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose. Plastic fragments.
	5	S2	5 to 7	24/NM	NA		SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (30-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES:
 * Jar headspace readings not available due to malfunctioning photo-ionization detector.
 EW-06(2-3) @ 1417, EW-06(3-5) @ 1420, EW-06(5-7) @ 1425.

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: 10 feet north of EW-06-GEI	
GROUND SURFACE EL. (ft): NA	DATE START/END: 7/31/2019 - 7/31/2019
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach, Tyler
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT
	EW-06N
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose.
	5	S2	5 to 7	24/NM	NA		SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (30-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: * Jar headspace readings not available due to malfunctioning PID. EW06N(0-0.5) @ 1230, EW06N(1-2) @ 1235, EW06N(2-3) @ 1240, EW06N(3-5) @ 1245, EW06N(5-7) @ 1250.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: 10 feet east of EW-07-GEI
 GROUND SURFACE EL. (ft): NA DATE START/END: 7/31/2019 - 7/31/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 7.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

BORING**EW-07E**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch/ 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-21"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose.
	5	S2	5 to 7	24/NM	NA		SAND	S1: (21-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (21-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES:

* Jar headspace readings not available due to malfunctioning photo-ionization detector.
 Samples collected: EW-07E(0-0.5) @ 1320, EW-07E(1-2) @ 1325, EW-07E(2-3) @ 1330, EW-07E(3-5) @ 1335, EW-07E(5-7) @ 1340.

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION	BORING
LOCATION: Southeast corner of EPA 2018 excavation	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>7/31/2019 - 7/31/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>Zach, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>
	EW-07-GEI
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>	
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>	
DRILLING METHOD: <u>Geoprobe</u>			
WATER LEVEL DEPTHS (ft): <u>Not measured</u>			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-24"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose.
	5						SAND	S1: (24-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist.
		S2	5 to 7	24/NM	NA			S2: (0-24"): Similar to S1 (24-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: * Jar headspace readings not available due to malfunctioning PID. EW-07(2-3) @ 1430, EW-07(3-5) @ 1435, EW-07(5-7) @ 1440.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING EW-07S PAGE 1 of 1
LOCATION: 10 feet south of EW-07-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 7/31/2019 - 7/31/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL S1: (0-21"): WIDELY GRADED SAND WITH GRAVEL (SW); 70% sand with 20% subangular gravel (0-0.5"), 10% fines. Dark brown, dense, and moist. Brick, metal, plastic, concrete, and charcoal fragments. S1: (21 - 33"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Dark brown, moist and somewhat dense. Brick and glass fragments. SAND S1: (33-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (33-60")	
	5	S2	5 to 7	24/NM	NA			
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: * Jar headspace readings not available due to malfunctioning PID. EW-07S(0-0.5) @ 1300, EW-07S(1-2) @ 1305, EW-07S(2-3) @ 1310, EW-07S(3-5) @ 1315, EW-07S(5-7) @ 1320.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING EW-07W
LOCATION: 10 feet west of EW-07-GEI	DATE START/END: 7/31/2019 - 7/31/2019	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: Zach, Tyler	
TOTAL DEPTH (ft): 7.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	*See note	FILL	S1: (0-36"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose.
	5	S2	5 to 7	24/NM	NA		SAND	S1: (36-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (36-60")
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: * Jar headspace readings not available due to malfunctioning PID. EW-07W(0-0.5) @ 1445, EW-07W(1-2) @ 1450, EW-07W(2-3) @ 1455, EW-07W(3-5) @ 1500, EW-07W(5-7) @ 1505.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING Q-05-GEI PAGE 1 of 1
LOCATION: North of small shear	DATE START/END: 8/6/2019 - 8/6/2019	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 7.0	RIG TYPE: Geoprobe 6620DT	
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): ∇ 5.5 8/6/2019		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA		FILL	S1: (0-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Brown, dry and loose. Brick, metal, and concrete fragments.
	5	S2	5 to 7	24/NM	NA	0.0 ppm ∇	SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 70% sand with 30% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (30-60")
	10					0.4 ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: Q-05(5-7) @ 0905	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING SB-3W-GEI
LOCATION: <u>Small shear</u>		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/5/2019 - 8/5/2019</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>Zach, Tyler</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM			FILL	S1: (0-6"): ASPHALT S1: (6-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Dark brown, dry an loose. Brick, glass, and plastic fragments.
	5	S2	5 to 7	24/NM		0.2 ppm	SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp, and dense. S2: (0-2'): Similar to S1 (30-60")
	10					0.5 ppm		
	15							
	20							
								Bottom of boring at depth 7 ft.

NOTES: SB-3W(3-5) @ 0920, SB-3W(5-7) @ 0925	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: Small shear, 10 feet north of SB-3W-GEI	SB-3WN
GROUND SURFACE EL. (ft): NA	
DATE START/END: 8/5/2019 - 8/5/2019	
VERTICAL DATUM: NA	
DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	PAGE 1 of 1
DRILLER NAME: Zach, Tyler	
LOGGED BY: B.Lee	
RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	3.6 ppm	FILL	S1: (0-6"): CONCRETE
						4.5 ppm		S1: (6-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Dark brown, dry an loose. Brick, glass, and plastic fragments.
						7.6 ppm	SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp, and dense.
	5	S2	5 to 7	24/NM	NA	1.0 ppm		S2: (0-24"): Similar to S1 (30-60")
						0.5 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SB-3WN(0-0.5) @ 0850, SB-3WN(1-2) @ 0855, SB-3WN(2-3) @ 0900, SB-3WN(3-5) @ 0905, SB-3WN(5-7) @ 0910	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION	BORING
LOCATION: Small shear, 10 feet south of SB-3W-GEI	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/2/2019 - 8/2/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>Andy, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>
	SB-3WS
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	1.5 ppm	SAND	S1: (0-6"): WIDELY GRADED SAND WITH GRAVEL (SW); 50% sand with 45% subangular gravel (0-1"), 5% fines. Gray, dry and loose.
						1.2 ppm		S1: (6-24"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Light brown, dry and loose.
						1.6 ppm		S1: (24-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Dark brown, dry and loose. Brick, glass, and plastic fragments.
	5	S2	5 to 7	24/NM	NA	0.6 ppm		S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, dense, and moist. S2: (0-24"): Similar to S1 (30-60")
						1.2 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SB-3WS(0-0.5) @ 0900, SB-3WS(1-2) @ 905, SB-3WS(2-3) @ 0910, SB-3WS(3-5) @ 0915, SB-3WS(5-7) @ 0920	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION	BORING
LOCATION: Small shear, 10 feet west of SB-3W-GEI	
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/5/2019 - 8/5/2019
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Tyler
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT
	SB-3WW
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.9 ppm	FILL	S1: (0-6"): ASPHALT
						1.3 ppm		S1: (6-30"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Dark brown, dry an loose. Brick, glass, and plastic fragments.
						0.4 ppm	SAND	S1: (30-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp, and dense.
	5	S2	5 to 7	24/NM	NA	0.3 ppm		S2: (0-24"): Similar to S1 (30-60")
						0.2 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SB-3WW(0-0.5) @ 0935, Dup-11(0-0.5), SB-3WW(1-2) @ 0940, SB-3WW(2-3) @ 0945, SB-3WW(3-5) @ 0950, SB-3WW(5-7) @ 0955	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING SB6-N1E PAGE 1 of 1
LOCATION: 10 feet north of SB6-N1-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/2/2019 - 8/2/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Andy, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.2 ppm	SAND	S1: (0-12"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Brown, somewhat dense, damp. Organic material.
	5	S2	5 to 7	24/NM	NA	0.1 ppm		S1: (12-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp and dense. S2: (0-24"): Similar to S1 (12-60")
	10					0.0 ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: SB6-N1E(0-0.5) @ 0945, SB6-N1E(1-2) @ 0950, SB6-N1E(2-3) @ 0955, SB6-N1E(3-5) @ 1000, SB6-N1E(5-7) @ 1005	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING SB6-N1-GEI PAGE 1 of 1
LOCATION: Northeast corner of property		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/5/2019 - 8/5/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 14.5	DRILLER NAME: Zach, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): ∇ 12.0 8/5/2019		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.0 ppm	SAND	S1: (0-18"): WIDELY GRADED SAND WITH GRAVEL (SW); 65% sand with 30% subangular gravel (0-0.5"), 5% fines. Brown, dry, and loose.
	5					0.0 ppm		S1: (18-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 90% sand with 10% fines. Brown, dense, and dry.
		S2	5 to 10	60/NM	NA	0.1 ppm		S2: (0-24"): Similar to S1 (18-60")
	10					0.0 ppm		S2: (24-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 90% sand with 10% fines. Brown, dense, and damp.
		S3	10 to 14.5	54/NM	NA			S3: (0-24"): Similar to S2 (24-60")
	15					0.0 ppm	∇	S3: (24-54"): NARROWLY GRADED SAND WITH SILT (SP-SM); 90% sand with 10% fines. Brown, dense, and saturated.
	20							Bottom of boring at depth 14.5 ft.

NOTES: SB6-N1(0-0.5) @ 1340, SB6-N1(1-2) @ 1345, SB6-N1(2-3) @ 1350, SB6-N1(3-5) @ 1355, SB6-N1(5-7) @ 1400, SB6-N1(11-13) @ 1440, FD-12(11-13), FD-14(11-13)	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION				BORING SB6-N1N PAGE 1 of 1
LOCATION:	10 feet east of SB6-N1-GEI			
GROUND SURFACE EL. (ft):	NA	DATE START/END:	8/2/2019 - 8/2/2019	
VERTICAL DATUM:	NA	DRILLING COMPANY:	Northern Drill Service, Inc.	
TOTAL DEPTH (ft):	7.0	DRILLER NAME:	Andy, Tyler	
LOGGED BY:	B.Lee	RIG TYPE:	Geoprobe 6620DT	

DRILLING INFORMATION			
HAMMER TYPE:	Automatic	CASING I.D./O.D.:	3.125 inch/ 3.25 inch
AUGER I.D./O.D.:	NA / NA	DRILL ROD O.D.:	NM
DRILLING METHOD:	Geoprobe		
WATER LEVEL DEPTHS (ft):	Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/NM	NA	14.2 ppm	SAND	S1: (0-12"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Brown, somewhat dense, damp. Organic material. S1: (12-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp and dense.
		S2	5 to 7	24/NM	NA	1.1 ppm		
	10					0.9 ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: SB6-N1N(0-0.5) @ 1035, SB6-N1N(1-2) @ 1040, SB6-N1N(2-3) @ 1045, SB6-N1N(3-5) @ 1050, SB6-N1N(5-7) @ 1055	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING SB6-N1S
LOCATION: 10 feet south of SB6-N1-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/2/2019 - 8/2/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Andy, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.1 ppm	SAND	S1: (0-12"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Brown, somewhat dense, damp. Organic material. S1: (12-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp and dense.
	5	S2	5 to 7	24/NM	NA	3.3 ppm		
						1.2 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SB6-N1S(0-0.5) @ 1010, SB6-N1S(1-2) @ 1015, SB6-N1S(2-3) @ 1020, SB6-N1S(3-5) @ 1025, SB6-N1S(5-7) @ 1030	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING SB6-N1W
LOCATION: 10 feet west of SB6-N1-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/2/2019 - 8/2/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Andy, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	2.3 ppm	SAND	S1: (0-12"): NARROWLY GRADED SAND WITH GRAVEL (SP) 85% Sand with 10% gravel (0-0.5"), 5% fines. Dark brown, somewhat dense and dry. Organic material. TOPSOIL.
						1.0 ppm		S1: (12-24"): WIDELY GRADED SAND WITH GRAVEL (SW); 50% sand with 45% subangular gravel. (0-2"), 5% silt. Light tan, loose, and dry.
						0.9 ppm		S1: (24-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, damp, and dense.
	5	S2	5 to 7	24/NM	NA	0.6 ppm		S2: (0-24"): Similar to S1 (24-60")
						1.6 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SB6-N1W(0-0.5) @ 1100, SB6-N1W(1-2) @ 1105, SB6-N1W(2-3) @ 1110, SB6-N1W(3-5) @ 1115, SB6-N1W(5-7) @ 1120	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: 10 feet east of SVA-05-GEI
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/7/2019 - 8/7/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 7.0 DRILLER NAME: Zach
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

BORING**SVA-05E**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	19.2 ppm	FILL	S1: (0-42"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-05"). 5% fines. Brown, dry and loose. Brick and coal fragments. S1: (42-60"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-05"). 5% fines. Black/whtie, dry and loose. Brick, glass, paper, canvas fragments. S2: (0-24"): Similar to S1 (42-60")
	5	S2	5 to 7	24/NM	NA	6.6 ppm		
						5.5 ppm		Bottom of boring at depth 7 ft.

NOTES:
 SVA-05E(0-0.5) @ 0915, SVA-05E(1-2) @ 0920, SVA-05E(2-3) @ 0925, SVA-05E(3-5) @ 0930, SVA-05(5-7) @ 0935

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION LOCATION: South of 2011 soil consolidation area GROUND SURFACE EL. (ft): NA DATE START/END: 8/7/2019 - 8/7/2019 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc. TOTAL DEPTH (ft): 7.0 DRILLER NAME: Zach LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT	BORING SVA-05-GEI PAGE 1 of 1
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DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch/ 2.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D.: NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA		FILL	S1: (0-36"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel. (0-0.5") 5% fines. Brown, loose and dry. Brick and glass fragments.
	5	S2	5 to 7	24/NM	NA	3.0 ppm		S1: (36-60"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel. (0-0.5") 5% fines. Black/white, loose and dry. Paper, plastic, metal, brick and glass fragments. S2: (0-24"): Similar to S1 (36-60")
	10					3.9 ppm		Bottom of boring at depth 7 ft.

NOTES: SVA-05(3-5) @ 0955, FD-16(3-5), SVA-05(5-7) @ 1000	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING SVA-05N PAGE 1 of 1
LOCATION: 10 feet north of SVA-05-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/7/2019 - 8/7/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch/ 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.3 ppm	FILL	S1: (0-42"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-05"). 5% fines. Brown, dry and loose. Brick fragments.
	5	S2	5 to 7	24/NM	NA	62.7 ppm		S1: (42-60"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-05"). 5% fines. Dark brown/black, moist and loose. Brick and coal fragments. Strong NLO. S2: (0-24"): Similar to S1 (42-60")
						264.8 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SVA-05N(0-0.5) @ 0850, SVA-05N(1-2) @ 0855, SVA-05N(2-3) @ 0900, SVA-05N(3-5) @ 0905, SVA-05N(5-7) @ 0910	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING SVA-05W PAGE 1 of 1
LOCATION: 10 feet west of SVA-05-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/7/2019 - 8/7/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch/ 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.6 ppm	FILL	S1: (0-12"): WIDELY GRADED SAND WITH GRAVEL (SW); 85% sand with 15% subangular gravel (0-0.5"). Brown, dry and loose. TOPSOIL
						1.4 ppm		S1: (12-30"): NARROWLY GRADED SAND WITH GRAVEL (SP); 80% sand with 15% subangular gravel (0-0.5"). 5% fines. White/yellow, loose, and dry. Brick fragments.
						1.7 ppm		S1: (30-60"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Dark brown/black, moist, and loose. Brick, glass, metal, and charcoal fragments.
	5	S2	5 to 7	24/NM	NA	60.4 ppm		S2: (0-24"): Similar to S1 (30-60")
						72.8 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: SVA-05W(0-0.5) @ 1020, SVA-05W(1-2) @ 1025, SVA-05W(2-3) @ 1030, SVA-05W(3-5) @ 1035, SVA-05W(5-7) @ 1040	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: At toe of slope on east side of stockpile 8
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/7/2019 - 8/7/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 2.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

**BORING
SVA-06-GEI**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch/ 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 2	24/NM	NA	0.4 ppm	FILL	S1: (0-12"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20 % subangular gravel (0-0.5"). 5% fines. Dry, loose, and brown. Brick and glass fragments. S1: (12-24"): WIDELY GRADED SAND WITH GRAVEL (SW) 75% sand with 20 % subangular gravel (0-0.5"). 5% fines. Dark brown/black, dry, and loose. Brick, plastic, charcoal, glass fragments. Strong NLO. Bottom of boring at depth 2 ft.
						324 ppm		
	5							
	10							
	15							
	20							

NOTES:
 SVA-06(0-1) @ 0800, SVA-06(1-2) @ 0805

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING W-07-GEI
LOCATION: East of large shear pad	DATE START/END: 8/6/2019 - 8/6/2019	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 7.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	0.2 ppm	FILL	S1: (0-3.6"): WIDELY GRADED SAND WITH GRAVEL (SW); 85% sand with 10% subangular gravel (0-0.5") 5% fines. Brown, loose, dry. Organic material. TOPSOIL. S1: (3.6-60"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, charcoal, concrete and wood fragments.
	5	S2	5 to 7	24/NM	NA	0.5 ppm		S2: (0-24"): Similar to S1 (3.6-60").
	10					1.2 ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: W-07(0-3) @ 0750, W-07(5-7) @ 0820	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING WSB-26-GEI PAGE 1 of 1
LOCATION: North of baler press area		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/6/2019 - 8/6/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: C. Devillers	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): ∇ 5.5 8/6/2019		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA		SAND	S1: (0-18"): WIDELY GRADED SAND WITH GRAVEL (SW); 65% sand with 30% subangular gravel (0-0.5"). 5% fines. Brown, dry and loose. S1: (18-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 70% sand with 30% fines. Light brown, dense, and moist.
	5	S2	5 to 7	24/NM	NA	0.1 ppm ∇		S2: (0-24"): Similar to S1 (18-60").
	10					0.1 ppm		Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: WSB-26(5-7) @ 1150	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>Western limit of EPA 2018 removal area</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/2/2019 - 8/2/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>Andy, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>
PAGE 1 of 1	

DRILLING INFORMATION			
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>	
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>	
DRILLING METHOD: <u>Geoprobe</u>			
WATER LEVEL DEPTHS (ft): <u>Not measured</u>			

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/NM	NA	0.0 ppm	S1: (0-36"): WIDELY GRADED SAND WITH GRAVEL (SW); 65% sand with 30% subangular gravel (0-1.5"), 5% fines. Light gray, dry, and loose. S1: (36-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist.	
		S2	5 to 7	24/NM	NA	0.1 ppm		S2: (0-24"): Similar to S1 (36-60").
	10					0.0 ppm	Bottom of boring at depth 7 ft.	
	15							
	20							

NOTES: WW-06(2-3) @ 1300, DUP-09(2-3), WW-06(3-5) @ 1305, WW-06(5-7) @ 1310	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: 10 feet north of WW-06-GEI	
GROUND SURFACE EL. (ft): NA	DATE START/END: 7/31/2019 - 7/31/2019
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Zach, Tyler
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT
	WW-06N
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			
WATER LEVEL DEPTHS (ft): Not measured			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/NM	NA	*See note	SAND	S1: (0-24"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"). 5% fines. Light brown, dry and loose. Root fragments
		S2	5 to 7	24/NM	NA			S1: (24-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist.
								S2: (0-24"): Similar to S1 (24-60").
	10							Bottom of boring at depth 7 ft.
	15							
	20							

<p>NOTES:</p> <p>* Jar headspace readings not available due to malfunctioning PID. WW06N(0-0.5) @ 1150, WW06N(1-2) @ 1155, WW06N(2-3) @ 1200, WW06N(3-5) @ 1205, WW06N(5-7) @ 1210, FG-34(5-7) @ 1400.</p>	<p>PROJECT NAME: Former Tombarello Site</p> <p>CITY/STATE: Lawrence, Massachusetts</p> <p>GEI PROJECT NUMBER: 1802441</p>
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING WW-06S PAGE 1 of 1
LOCATION: 10 feet south of WW-06-GEI		
GROUND SURFACE EL. (ft): NA	DATE START/END: 8/2/2019 - 8/2/2019	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	DRILLER NAME: Andy, Tyler	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 3.125 inch/ 3.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		
WATER LEVEL DEPTHS (ft): Not measured		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/NM	NA	5.0 ppm 3.5 ppm 3.0 ppm	SAND S1: (0-36"): WIDELY GRADED SAND WITH GRAVEL (SW); 65% sand with 30% subangular gravel (0-1.5"), 5% fines. Light gray, dry, and loose. S1: (36-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light tan, dense, and moist. S2: (0-24"): Similar to S1 (36-60").	
		S2	5 to 7	24/NM	NA	7.1 ppm		
	10					6.7 ppm	Bottom of boring at depth 7 ft.	
	15							
	20							

NOTES: WW-06S(0-0.5) @ 1150, WW-06S(1-2) @ 1155, WW-06S(2-3) @ 1200, WW-06S(3-5) @ 1205, WW-06S(5-7) @ 1210	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING WW-06W PAGE 1 of 1
LOCATION: 10 feet west of WW-06-GEI		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/2/2019 - 8/2/2019</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>7.0</u>	DRILLER NAME: <u>Andy, Tyler</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>3.125 inch/ 3.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/NM	NA	1.7 ppm	FILL	S1: (0-24"): WIDELY GRADED SAND WITH GRAVEL (SW); 65% sand with 30% subangular gravel (0-1.5"), 5% fines. Light gray, dry, and loose. Brick fragments.
						0.7 ppm 7.2 ppm	SAND	S1: (24-60"): NARROWLY GRADED SAND WITH SILT (SP-SM); 80% sand with 20% fines. Light brown, dense, and damp.
	5	S2	5 to 7	24/NM	NA	0.8 ppm		S2: (0-24"): Similar to S1 (24-60").
						10.4 ppm		Bottom of boring at depth 7 ft.
	10							
	15							
	20							

NOTES: WW-06W(0-0.5) @ 1225, WW-06W(1-2) @ 1230, WW-06W(2-3) @ 1235, WW-06W(3-5) @ 1240, WW-06W(5-7) @ 1245	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION		BORING EW-07ER
LOCATION: 12.5 feet east of EW-07E	DATE START/END: 3/12/2020 - 3/12/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 5.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	0 to 5	S1	0 to 5	60/41	NA		FILL S1: (0-15"): WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to coarse sand, ~15% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown to black. Contains plastic and glass fragments, burnt odor. S1: (15-21"): BRICK FRAGMENTS	
	5						SAND S1: (21-41"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, dark gray to tan.	
	Bottom of boring at depth 5 ft.							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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BORING INFORMATION

LOCATION: 10 feet east of EW-07S
 GROUND SURFACE EL. (ft): NA DATE START/END: 3/13/2020 - 3/13/2020
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 5.0 DRILLER NAME: Justin, Drew
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

**BORING
EW-07SE**

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 3.125 inch / 3.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/27	NA	FILL SAND	S1: (0-10"): WIDELY GRADED SAND WITH GRAVEL (SW); ~75% fine to coarse sand, ~20% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown. Contains brick and metal fragments. S1: (10-17"): SILTY SAND (SM); ~75% fine to medium sand, ~25% non-plastic fines, medium dense, dark brown. S1: (17-27"): SILTY SAND (SM); ~75% fine to medium sand, ~25% non-plastic fines, medium dense, gray to tan. S2: (0-20"): SILTY SAND (SM); Similar to S1(17-27").	
		S2	3 to 5	24/20	NA			
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING EW-07SEE
LOCATION: 10 feet east of EW-07SE	DATE START/END: 3/12/2020 - 3/12/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 5.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	0 to 5	S1	0 to 5	60/44	NA		FILL S1: (0-17"): WIDELY GRADED SAND WITH GRAVEL (SW); ~75% fine to coarse sand, ~20% subangular gravel (0-1"), ~5% non-plastic fines, loose, brown to black. Contains glass, brick, and plastic fragments, slight chemical odor. SAND S1: (17-24"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, black. Strong chemical odor. S1: (24-44"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, gray-tan.	
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING EW-07SSE
LOCATION: 10 feet east of EW-07SS	DATE START/END: 3/12/2020 - 3/12/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 5.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/36	NA		FILL	S1: (0-17"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~20% subangular gravel (0-1"), ~5% non-plastic fines, loose, dark brown to black. Contains metal, glass, and plastic fragments. S1: (17-21"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, black. S1: (21-36"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, tan.
							SAND	Bottom of boring at depth 5 ft.

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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BORING INFORMATION		BORING EW-07SSS
LOCATION: 10 feet south of EW-07SS	DATE START/END: 3/12/2020 - 3/12/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 5.0	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	5	S1	0 to 5	60/49	NA		FILL	S1: (0-18"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% fine to coarse sand, 20% subangular gravel (0-1"), 5% non-plastic fines, loose, dark brown to black. Contains glass and brick fragments.
							SAND	S1: (18-20"): SILTY SAND (SM); 85% fine to medium sand, 15% non-plastic fines, dense, black.
								S1: (20-44"): SILTY SAND (SM); Similar to S1 (18-20") except tan to brown.
								Bottom of boring at depth 5 ft.

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION

LOCATION: 10 feet west of EW-07SS

GROUND SURFACE EL. (ft): NA

VERTICAL DATUM: NA

TOTAL DEPTH (ft): 5.0

LOGGED BY: B.Lee

DATE START/END: 3/12/2020 - 3/12/2020

DRILLING COMPANY: Northern Drill Service, Inc.

DRILLER NAME: C. Devillers

RIG TYPE: Geoprobe 6620DT

BORING**EW-07SSW**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic

AUGER I.D./O.D.: NA / NA

DRILLING METHOD: Geoprobe

CASING I.D./O.D.: 2.125 inch / 2.25 inch

DRILL ROD O.D.: NM

CORE BARREL TYPE: Macrocore

CORE BARREL I.D./O.D. NA / NA

ABBREVIATIONS:

Pen. = Penetration Length
 Rec. = Recovery Length
 RQD = Rock Quality Designation
 = Length of Sound Cores > 4 in / Pen., %
 WOR = Weight of Rods
 WOH = Weight of Hammer

S = Split Spoon Sample
 C = Core Sample
 U = Undisturbed Sample
 SC = Sonic Core
 DP = Direct Push Sample
 HSA = Hollow-Stem Auger

Qp = Pocket Penetrometer Strength
 Sv = Pocket Torvane Shear Strength
 LL = Liquid Limit
 PI = Plasticity Index
 PID = Photoionization Detector
 I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	0 to 5	S1	0 to 5	60/43	NA		FILL SAND S1: (0-11"): WIDELY GRADED SAND WITH GRAVEL (SW); ~75% fine to coarse sand, ~20% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown to black. Contains glass and brick fragments. S1: (11-12"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, black. S1: (12-43"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, tan to brown.	
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION		BORING SB-3WWN
LOCATION: 10 feet north of SB-3WW		
GROUND SURFACE EL. (ft): NA	DATE START/END: 3/13/2020 - 3/13/2020	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 5.0	DRILLER NAME: Justin, Drew	
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/28	NA		SAND S1: (0-3"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subrounded gravel (0-0.5"), loose, brown. Contains glass fragments and organic material. TOPSOIL. S1: (3-6"): WIDELY GRADED GRAVEL WITH SAND (GW); ~60% subangular gravel (0-0.75"), ~35% fine to coarse sand, ~5% non-plastic fines, loose, dark gray. S1: (6-12"): WIDELY GRADED SAND WITH GRAVEL (SW); ~75% fine to coarse sand, ~20% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, tan. S1: (12-22"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, tan. S1: (22-28"): WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to coarse sand, ~15% subangular gravel (0-1"), ~5% non-plastic fines, medium dense, dark brown. S2: (0-22"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, medium dense, yellow to tan. Bottom of boring at depth 5 ft.	
	5	S2	3 to 5	24/22	NA			
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING SB-3WWS
LOCATION: 10 feet south of SB-3WW		
GROUND SURFACE EL. (ft): NA	DATE START/END: 3/13/2020 - 3/13/2020	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 5.0	DRILLER NAME: Justin, Drew	PAGE 1 of 1
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/29	NA		FILL	S1: (0-4"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to coarse sand, ~20% subangular gravel (0-0.5"), ~10% non-plastic fines, loose, brown. TOPSOIL
		S2	3 to 5	24/22	NA			SAND
	5							Bottom of boring at depth 5 ft.
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING SB-3WWW
LOCATION: 10 feet west of SB-3WW		
GROUND SURFACE EL. (ft): NA	DATE START/END: 3/13/2020 - 3/13/2020	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 5.0	DRILLER NAME: Justin, Drew	PAGE 1 of 1
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 1	12/12	NA		S1:(0-12"): CONCRETE	
		S2	1 to 5	48/27	NA		FILL S2(0-27"): WIDELY GRADED SAND (SW); ~90% fine to coarse sand, ~5% subangular gravel (0-0.75"), ~5% non-plastic fines.	
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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BORING INFORMATION		BORING SVA-01E
LOCATION: 10 feet east of SVA-01-GEI		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/12/2020 - 3/12/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>5.0</u>	DRILLER NAME: <u>C. Devillers</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/53	NA		FILL S1: (0-4"): WIDELY GRADED SAND (SW); ~90% fine to coarse sand, ~5% subrounded gravel (0-0.25"), ~5% non-plastic fines, loose, tan. SAND S1: (4-9"): WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to coarse sand, ~15% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown. Contains glass fragments. S1: (9-18"): WIDELY GRADED SAND WITH GRAVEL (SW); ~50% fine to coarse sand, ~45% subangular gravel (0-1.5"), ~5% non-plastic fines, loose, gray. Contains brick fragments. S1: (18-53"): SILTY SAND (SM); ~75% mostly fine sand, ~25% non-plastic fines, dense, tan to brown. Bottom of boring at depth 5 ft.	
	5							
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION

LOCATION: _____

GROUND SURFACE EL. (ft): NADATE START/END: 3/12/2020 - 3/12/2020VERTICAL DATUM: NADRILLING COMPANY: Northern Drill Service, Inc.TOTAL DEPTH (ft): 5.0DRILLER NAME: C. DevillersLOGGED BY: B.LeeRIG TYPE: Geoprobe 6620DT**BORING****SVA-01-GEI**

PAGE 1 of 1

DRILLING INFORMATIONHAMMER TYPE: AutomaticCASING I.D./O.D.: 2.125 inch / 2.25 inchCORE BARREL TYPE: MacrocoreAUGER I.D./O.D.: NA / NADRILL ROD O.D.: NMCORE BARREL I.D./O.D. NA / NADRILLING METHOD: Geoprobe**ABBREVIATIONS:**

Pen. = Penetration Length
 Rec. = Recovery Length
 RQD = Rock Quality Designation
 = Length of Sound Cores > 4 in / Pen., %
 WOR = Weight of Rods
 WOH = Weight of Hammer

S = Split Spoon Sample
 C = Core Sample
 U = Undisturbed Sample
 SC = Sonic Core
 DP = Direct Push Sample
 HSA = Hollow-Stem Auger

Qp = Pocket Penetrometer Strength
 Sv = Pocket Torvane Shear Strength
 LL = Liquid Limit
 PI = Plasticity Index
 PID = Photoionization Detector
 I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
	0 to 5	S1	0 to 5	60/54	NA		FILL SAND S1: (0-9"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subangular gravel (0-1"), ~5% non-plastic fines, loose, dark brown. S1: (9-18"): WIDELY GRADED SAND WITH GRAVEL (SW); ~50% fine to coarse sand, ~45% subangular gravel, ~5% non-plastic fines, loose, gray. S1: (18-54"): SILTY SAND (SM); ~75% mostly fine sand, ~25% non-plastic fines, dense, tan to brown.	
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:

PROJECT NAME: Former Tombarello SiteCITY/STATE: Lawrence, MassachusettsGEI PROJECT NUMBER: 1802441

BORING INFORMATION		BORING W-07EE
LOCATION: 10 feet east of W-07E		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/13/2020 - 3/13/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>5.0</u>	DRILLER NAME: <u>Drew</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/28	NA	FILL	S1: (0-28"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subangular gravel (0-1"), ~10% non-plastic fines, loose, dark brown. Contains concrete and brick fragments.	
		S2	3 to 5	24/14	NA		S2: (0-14"): WIDELY GRADED SAND WITH SILT AND GRAVEL; Similar to S1 (0-28") except light brown.	
	5						Bottom of boring at depth 5 ft.	
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING W-07SE PAGE 1 of 1
LOCATION: 10 feet east of W-07S		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/13/2020 - 3/13/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>5.0</u>	DRILLER NAME: <u>Justin, Drew</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/27	NA		FILL	S1: (0-2"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~80% fine to coarse sand, ~10% subrounded gravel (0-0.25"), ~10% non-plastic fines, loose, dark brown. Contains organic material. TOPSOIL.
		S2	3 to 5	24/24	NA		SAND	S1: (2-22"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown to black. Contains brick, plastic, and glass fragments. S1: (22-27"): SILTY SAND (SM); ~70% fine to medium sand, ~20% non-plastic fines, medium dense, dark gray. S2: (0-24"): SILTY SAND (SM); Similar to S1 (22-27").
	5							Bottom of boring at depth 5 ft.
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING

W-07SS

PAGE 1 of 1

BORING INFORMATION

LOCATION: 10 feet south of W-07S

GROUND SURFACE EL. (ft): NA

VERTICAL DATUM: NA

TOTAL DEPTH (ft): 5.0

LOGGED BY: B.Lee

DATE START/END: 3/13/2020 - 3/13/2020

DRILLING COMPANY: Northern Drill Service, Inc.

DRILLER NAME: Justin, Drew

RIG TYPE: Geoprobe 6620DT

DRILLING INFORMATION

HAMMER TYPE: Automatic

AUGER I.D./O.D.: NA / NA

DRILLING METHOD: Geoprobe

CASING I.D./O.D.: 2.125 inch / 2.25 inch

DRILL ROD O.D.: NM

CORE BARREL TYPE: Macrocore

CORE BARREL I.D./O.D. NA / NA

ABBREVIATIONS:

Pen. = Penetration Length
 Rec. = Recovery Length
 RQD = Rock Quality Designation
 = Length of Sound Cores > 4 in / Pen., %
 WOR = Weight of Rods
 WOH = Weight of Hammer

S = Split Spoon Sample
 C = Core Sample
 U = Undisturbed Sample
 SC = Sonic Core
 DP = Direct Push Sample
 HSA = Hollow-Stem Auger

Qp = Pocket Penetrometer Strength
 Sv = Pocket Torvane Shear Strength
 LL = Liquid Limit
 PI = Plasticity Index
 PID = Photoionization Detector
 I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/28	NA		FILL	S1: (0-4"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM): ~80% fine to coarse sand, ~10% subrounded gravel (0-0.5"), ~10% non-plastic fines, loose, dark brown. Contains organic material. TOPSOIL. S1: (4-6"): WIDELY GRADED SAND WITH GRAVEL (SW): ~60% fine to coarse sand, ~35% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, gray. S1: (6-28"): WIDELY GRADED SAND WITH GRAVEL (SW): ~70% fine to coarse sand, ~25% subangular gravel (0-0.75"), ~5% non-plastic fines, loose, dark brown to red. Contains glass and brick fragments. S2: (0-12"): WIDELY GRADED SAND WITH GRAVEL (SW); Similar to S1 (6-28"). Bottom of boring at depth 5 ft.
		S2	3 to 5	24/12	NA			
	5							
	10							
	15							
	20							

NOTES:

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION		BORING W-07SW
LOCATION: 10 feet west of W-07S		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/13/2020 - 3/13/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>5.0</u>	DRILLER NAME: <u>Justin, Drew</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/28	NA		FILL	<p>S1: (0-2"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, 15% subrounded gravel (0-0.25"), ~10% non-plastic fines, loose, brown. Contains organic material. TOPSOIL.</p> <p>S1: (2-6"): WIDELY GRADED SAND WITH GRAVEL (SW); ~60% fine to coarse sand, ~35% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, gray.</p> <p>S1: (6-28"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subangular gravel (0-1"), ~10% non-plastic fines, loose, dark brown to black. Fine to coarse sand lens from 15-18". Contains brick and wood fragments.</p> <p>S2: (0-15"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subangular gravel (0-1"), ~10% non-plastic fines, loose, dark brown to black. Contains brick and wood fragments.</p> <p>Bottom of boring at depth 5 ft.</p>
		S2	3 to 5	24/15	NA			
	5							
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION	BORING
LOCATION: NE corner of NW portion of Lot 1	Lot 1 Disp-01
GROUND SURFACE EL. (ft): NA	
DATE START/END: 3/12/2020 - 3/12/2020	
VERTICAL DATUM: NA	
DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 7.0	PAGE 1 of 1
DRILLER NAME: C. Devillers	
LOGGED BY: B.Lee	
RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 5	60/23	NA	0.0 ppm	FILL	S1: (0-3"): ASPHALT
	5	S2	5 to 7	24/7	NA	0.1 ppm		S1: (3-5"): WIDELY GRADED SAND WITH GRAVEL (SW); ~55% fine to coarse sand, ~40% subrounded gravel (0-0.25"), ~5% non-plastic fines, dark gray, loose.
							SAND	S1: (5-23"): WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to coarse sand, ~30% subrounded gravel (0-1.5"), ~5% non-plastic fines, loose, black to brown. Contains brick and slag fragments
								S2: (0-7"): SILTY SAND (SM); ~70% fine to medium sand, ~30% slightly plastic fines, medium dense, light brown.
	10							Bottom of boring at depth 7 ft.
	15							
	20							

NOTES: ppm = parts per million	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020 - COPY.GPJ 3/31/20

BORING INFORMATION		BORING Lot 1 Disp-02A PAGE 1 of 1
LOCATION: Near south boundary of NW portion of Lot 1		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/12/2020 - 3/12/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>3.0</u>	DRILLER NAME: <u>C. Devillers</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/27	NA	0.0 ppm	FILL	S1: (0-3"): ASPHALT S1: (3-7"): NARROWLY GRADED SAND WITH GRAVEL (SP); ~50% mostly fine sand, ~45% subangular gravel (0-0.5"), ~5% non-plastic fines, loose. S1: (7-15"): WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to coarse sand, ~30% subangular gravel (0-0.75"), ~5% non-plastic fines, black, loose. Burnt odor. S1: (15-27"): WIDELY GRADED SAND (SW); ~90% fine to coarse sand, ~5% subrounded gravel (0-0.25"), ~5% non-plastic fines, tan to brown, loose. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES: ppm = parts per million	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020 - COPY.GPJ 3/31/20

BORING INFORMATION

LOCATION: Near south boundary of NW portion of Lot 1

GROUND SURFACE EL. (ft): NA

VERTICAL DATUM: NA

TOTAL DEPTH (ft): 3.0

LOGGED BY: B.Lee

DATE START/END: 3/12/2020 - 3/12/2020

DRILLING COMPANY: Northern Drill Service, Inc.

DRILLER NAME: C. Devillers

RIG TYPE: Geoprobe 6620DT

BORING**Lot 1 Disp-02B**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic

AUGER I.D./O.D.: NA / NA

DRILLING METHOD: Geoprobe

CASING I.D./O.D.: 2.125 inch / 2.25 inch

DRILL ROD O.D.: NM

CORE BARREL TYPE: Macrocore

CORE BARREL I.D./O.D. NA / NA

ABBREVIATIONS:

Pen. = Penetration Length
 Rec. = Recovery Length
 RQD = Rock Quality Designation
 = Length of Sound Cores > 4 in / Pen., %
 WOR = Weight of Rods
 WOH = Weight of Hammer

S = Split Spoon Sample
 C = Core Sample
 U = Undisturbed Sample
 SC = Sonic Core
 DP = Direct Push Sample
 HSA = Hollow-Stem Auger

Qp = Pocket Penetrometer Strength
 Sv = Pocket Torvane Shear Strength
 LL = Liquid Limit
 PI = Plasticity Index
 PID = Photoionization Detector
 I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/30	NA	0.3 ppm	FILL	S1: (0-3"): ASPHALT S1: (3-6"): WIDELY GRADED SAND WITH GRAVEL (SW); ~50% fine to coarse sand, ~45% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, gray. S1: 6-30"): NARROWLY GRADED SAND WITH SILT (SP-SM); ~85% mostly fine sand, ~10% non-plastic fines, ~5% subrounded gravel (0-0.25"), medium dense, dark brown. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES: ppm = parts per million

PROJECT NAME: Former Tombarello Site

CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441



BORING INFORMATION		BORING Lot 1 Disp-02C PAGE 1 of 1
LOCATION: Near south boundary of NW portion of Lot 1		
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>3/12/2020 - 3/12/2020</u>	
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>3.0</u>	DRILLER NAME: <u>C. Devillers</u>	
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Geoprobe 6620DT</u>	

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch / 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Geoprobe</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/27	NA	0.0 ppm	FILL	S1: (0-3"): ASPHALT S1: (3-5"): NARROWLY GRADED SAND WITH GRAVEL (SP); ~50% mostly fine sand, ~45% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, light gray. S1: (5-23"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subangular gravel, ~5% non-plastic fines, loose, brown to black. S1: (23-27"): DRIED PAINT/CAULKING; No visible grains, white. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES: ppm = parts per million	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020 - COPY.GPJ 3/31/20

BORING INFORMATION		BORING Lot 2 Disp-01 PAGE 1 of 1
LOCATION: Lot 2	DATE START/END: 3/13/2020 - 3/13/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: Justin, Drew	
TOTAL DEPTH (ft): 3.0	RIG TYPE: Geoprobe 6620DT	
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/30	NA	0.1 ppm	FILL	S1: (0-3"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subangular gravel (0-0.5"), ~10% non-plastic fines, loose, light brown. Contains organic material. TOPSOIL. S1: (3-30"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); 75% fine to coarse sand, ~15% subangular gravel (0-0.75"), ~ 10% non-plastic fines, loose, dark brown-black. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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BORING INFORMATION		BORING Lot 2 Disp-02 PAGE 1 of 1
LOCATION: Lot 2	DATE START/END: 3/13/2020 - 3/13/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: Justin, Drew	
TOTAL DEPTH (ft): 3.0	RIG TYPE: Geoprobe 6620DT	
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/27	NA	0.1 ppm		
	5						FILL	S1: (0-2"): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% fine to coarse sand, ~15% subrounded gravel (0-0.5"), ~10% non-plastic fines, loose, brown. Contains organic material. TOPSOIL.
							SAND	S1: (2-6"): WIDELY GRADED GRAVEL WITH SAND (GW); ~55% subangular gravel (0-1"), ~40% fine to coarse sand, ~5% non-plastic fines, loose, gray to black.
								S1: (6-12"): WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to coarse sand, 15% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, tan.
								S1: (12-27"): SILTY SAND (SM); ~80% fine to medium sand, ~20% non-plastic fines, medium dense, tan.
								Bottom of boring at depth 3 ft.

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION

LOCATION: Lot 2
 GROUND SURFACE EL. (ft): NA DATE START/END: 3/12/2020 - 3/12/2020
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 3.0 DRILLER NAME: C. Devillers
 LOGGED BY: B.Lee RIG TYPE: Geoprobe 6620DT

BORING
Lot 2 Disp-03

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch / 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Geoprobe

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/32	NA	0.3 ppm	FILL SAND	S1: (0-14"): WIDELY GRADED SAND WITH GRAVEL (SW); ~75% fine to coarse sand, ~20% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, brown to black. Contains brick, metal, and glass fragments, slight chemical odor. S1: (14-20"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, dense, dark brown. Slight chemical odor. S1: (20-32"): SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines, dense, tan to brown. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES:

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION		BORING Lot 2 Disp-04 PAGE 1 of 1
LOCATION: Lot 2	DATE START/END: 3/12/2020 - 3/12/2020	
GROUND SURFACE EL. (ft): NA	DRILLING COMPANY: Northern Drill Service, Inc.	
VERTICAL DATUM: NA	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 2.0	RIG TYPE: Geoprobe 6620DT	
LOGGED BY: B.Lee		

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 2	24/22	NA	0.0 ppm	FILL	S1: (0-2"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, dark gray. S1: (2-19"): WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to coarse sand, ~15% subangular gravel (0-1"), ~5% non-plastic fines, loose, dark brown. Contains brick and glass fragments. S1: (19-22"): SILTY SAND (SM); ~75% mostly fine sand, ~25% non-plastic fines, medium dense, tan to brown. SAND. Bottom of boring at depth 2 ft.
	5							
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION			BORING Lot 2 Disp-05 PAGE 1 of 1
LOCATION: Lot 2	GROUND SURFACE EL. (ft): NA	DATE START/END: 3/12/2020 - 3/12/2020	
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.	DRILLER NAME: C. Devillers	
TOTAL DEPTH (ft): 3.0	LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT	

DRILLING INFORMATION		
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA
DRILLING METHOD: Geoprobe		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/32	NA	1.7 ppm	FILL	S1: (0-4"): ASPHALT S1: (4-10"): SAND WITH GRAVEL (SW); ~50% fine to coarse sand, ~45% (0-0.5"), ~5% non-plastic fines, loose, light gray. S1: (10-26"): SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subrounded gravel (0-0.5"), ~5% non-plastic fines, loose, dark brown to black. Contains brick fragments and burnt odor. S1:(26-32"): WIDELY GRADED GRAVEL WITH SAND (GW); ~55% subangular gravel (0-1.5"), ~40% fine to coarse sand, ~5% non-plastic fines, loose, light gray. Bottom of boring at depth 3 ft.
5								
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20

BORING INFORMATION	BORING
LOCATION: Lot 2	
GROUND SURFACE EL. (ft): NA	DATE START/END: 3/12/2020 - 3/12/2020
VERTICAL DATUM: NA	DRILLING COMPANY: Northern Drill Service, Inc.
TOTAL DEPTH (ft): 3.0	DRILLER NAME: C. Devillers
LOGGED BY: B.Lee	RIG TYPE: Geoprobe 6620DT
	Lot 2 Disp-06
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: Automatic	CASING I.D./O.D.: 2.125 inch / 2.25 inch	CORE BARREL TYPE: Macrocore	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D. NA / NA	
DRILLING METHOD: Geoprobe			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 3	36/30	NA	1.8 ppm	FILL SAND	S1: (0-2"): ASPHALT S1: (2-5"): NARROWLY GRADED SAND WITH GRAVEL (SP); ~60% mostly fine sand, ~35% subangular gravel (0-0.5"), ~5% non-plastic fines, loose, gray. S1: (5-25"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~25% subangular gravel (0-1"), ~5% non-plastic fines, loose, brown to black. Contains metal fragments. S1: (25-30"): SILTY SAND (SM); ~65% mostly fine sand, 35% slightly plastic fines, loose, black. Bottom of boring at depth 3 ft.
	5							
	10							
	15							
	20							

NOTES:	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOCATION-LAYER NAME BORING LOGS 2020.GPJ 4/1/20



MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix G

Laboratory Data Report – Groundwater



ANALYTICAL REPORT

Lab Number:	L2001201
Client:	Crede Associates, LLC 776 Main Street Westbrook, ME 04092
ATTN:	Rick Vandenberg
Phone:	(207) 828-1272
Project Name:	TOMBARELLO
Project Number:	17001426
Report Date:	01/17/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2001201-01	CA-MW-5	WATER	LAWRENCE, MA	01/10/20 09:45	01/10/20
L2001201-02	CA-6	WATER	LAWRENCE, MA	01/10/20 09:50	01/10/20

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
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
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
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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
A response to questions G, H and I 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)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

Case Narrative (continued)

MCP Related Narratives

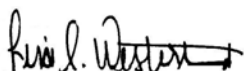
EPH

In reference to question G:

One or more of the target analytes did not achieve the requested CAM reporting limits.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Lisa Westerlind

Title: Technical Director/Representative

Date: 01/17/20

QC OUTLIER SUMMARY REPORT

Project Name: TOMBARELLO

Lab Number: L2001201

Project Number: 17001426

Report Date: 01/17/20

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
Extractable Petroleum Hydrocarbons - Westborough Lab								
EPH-04-1.1	Batch QC	WG1329244-3	C11-C22 Aromatics	LCSD	27	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Naphthalene	LCSD	37	40-140	01-02	potential low bias
EPH-04-1.1	Batch QC	WG1329244-3	Naphthalene	LCSD	41	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	2-Methylnaphthalene	LCSD	35	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Acenaphthylene	LCSD	30	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Acenaphthene	LCSD	29	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Fluorene	LCSD	27	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Phenanthrene	LCSD	29	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Anthracene	LCSD	28	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Fluoranthene	LCSD	26	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Pyrene	LCSD	29	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Benzo(a)anthracene	LCSD	26	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Chrysene	LCSD	26	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Benzo(b)fluoranthene	LCSD	26	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Benzo(k)fluoranthene	LCSD	27	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Nonane (C9)	LCSD	20	30-140	01-02	potential low bias
EPH-04-1.1	Batch QC	WG1329244-3	Nonane (C9)	LCSD	86	25	01-02	non-directional bias
EPH-04-1.1	Batch QC	WG1329244-3	Decane (C10)	LCSD	30	40-140	01-02	potential low bias
EPH-04-1.1	Batch QC	WG1329244-3	Decane (C10)	LCSD	62	25	01-02	non-directional bias

ORGANICS

PETROLEUM HYDROCARBONS

Project Name: TOMBARELLO

Lab Number: L2001201

Project Number: 17001426

Report Date: 01/17/20

SAMPLE RESULTS

Lab ID: L2001201-01
 Client ID: CA-MW-5
 Sample Location: LAWRENCE, MA

Date Collected: 01/10/20 09:45
 Date Received: 01/10/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water
 Analytical Method: 98,EPH-04-1.1
 Analytical Date: 01/13/20 21:38
 Analyst: MEO

Extraction Method: EPA 3510C
 Extraction Date: 01/12/20 01:03
 Cleanup Method1: EPH-04-1
 Cleanup Date1: 01/12/20

Quality Control Information

Condition of sample received: Satisfactory
 Aqueous Preservative: Laboratory Provided Preserved Container
 Sample Temperature upon receipt: Received on Ice
 Sample Extraction method: Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	ND		ug/l	10.0	--	1
2-Methylnaphthalene	ND		ug/l	10.0	--	1
Acenaphthylene	ND		ug/l	10.0	--	1
Acenaphthene	ND		ug/l	10.0	--	1
Fluorene	ND		ug/l	10.0	--	1
Phenanthrene	ND		ug/l	10.0	--	1
Anthracene	ND		ug/l	10.0	--	1
Fluoranthene	ND		ug/l	10.0	--	1
Pyrene	ND		ug/l	10.0	--	1
Benzo(a)anthracene	ND		ug/l	10.0	--	1
Chrysene	ND		ug/l	10.0	--	1
Benzo(b)fluoranthene	ND		ug/l	10.0	--	1
Benzo(k)fluoranthene	ND		ug/l	10.0	--	1
Benzo(a)pyrene	ND		ug/l	10.0	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	10.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	10.0	--	1
Benzo(ghi)perylene	ND		ug/l	10.0	--	1

Project Name: TOMBARELLO**Lab Number:** L2001201**Project Number:** 17001426**Report Date:** 01/17/20**SAMPLE RESULTS**

Lab ID: L2001201-01

Date Collected: 01/10/20 09:45

Client ID: CA-MW-5

Date Received: 01/10/20

Sample Location: LAWRENCE, MA

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Extractable Petroleum Hydrocarbons - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	55		40-140
o-Terphenyl	50		40-140
2-Fluorobiphenyl	63		40-140
2-Bromonaphthalene	62		40-140

Project Name: TOMBARELLO

Lab Number: L2001201

Project Number: 17001426

Report Date: 01/17/20

SAMPLE RESULTS

Lab ID: L2001201-02
 Client ID: CA-6
 Sample Location: LAWRENCE, MA

Date Collected: 01/10/20 09:50
 Date Received: 01/10/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water
 Analytical Method: 98,EPH-04-1.1
 Analytical Date: 01/13/20 20:52
 Analyst: MEO

Extraction Method: EPA 3510C
 Extraction Date: 01/12/20 01:03
 Cleanup Method1: EPH-04-1
 Cleanup Date1: 01/12/20

Quality Control Information

Condition of sample received: Satisfactory
 Aqueous Preservative: Laboratory Provided Preserved Container
 Sample Temperature upon receipt: Received on Ice
 Sample Extraction method: Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	ND		ug/l	10.0	--	1
2-Methylnaphthalene	ND		ug/l	10.0	--	1
Acenaphthylene	ND		ug/l	10.0	--	1
Acenaphthene	ND		ug/l	10.0	--	1
Fluorene	ND		ug/l	10.0	--	1
Phenanthrene	ND		ug/l	10.0	--	1
Anthracene	ND		ug/l	10.0	--	1
Fluoranthene	ND		ug/l	10.0	--	1
Pyrene	ND		ug/l	10.0	--	1
Benzo(a)anthracene	ND		ug/l	10.0	--	1
Chrysene	ND		ug/l	10.0	--	1
Benzo(b)fluoranthene	ND		ug/l	10.0	--	1
Benzo(k)fluoranthene	ND		ug/l	10.0	--	1
Benzo(a)pyrene	ND		ug/l	10.0	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	10.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	10.0	--	1
Benzo(ghi)perylene	ND		ug/l	10.0	--	1

Project Name: TOMBARELLO**Lab Number:** L2001201**Project Number:** 17001426**Report Date:** 01/17/20**SAMPLE RESULTS**

Lab ID: L2001201-02
 Client ID: CA-6
 Sample Location: LAWRENCE, MA

Date Collected: 01/10/20 09:50
 Date Received: 01/10/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Extractable Petroleum Hydrocarbons - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	62		40-140
o-Terphenyl	66		40-140
2-Fluorobiphenyl	82		40-140
2-Bromonaphthalene	81		40-140

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 98,EPH-04-1.1
Analytical Date: 01/14/20 00:38
Analyst: MEO

Extraction Method: EPA 3510C
Extraction Date: 01/12/20 01:03
Cleanup Method: EPH-04-1
Cleanup Date: 01/12/20

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-02 Batch: WG1329244-1					
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--
Naphthalene	ND		ug/l	10.0	--
2-Methylnaphthalene	ND		ug/l	10.0	--
Acenaphthylene	ND		ug/l	10.0	--
Acenaphthene	ND		ug/l	10.0	--
Fluorene	ND		ug/l	10.0	--
Phenanthrene	ND		ug/l	10.0	--
Anthracene	ND		ug/l	10.0	--
Fluoranthene	ND		ug/l	10.0	--
Pyrene	ND		ug/l	10.0	--
Benzo(a)anthracene	ND		ug/l	10.0	--
Chrysene	ND		ug/l	10.0	--
Benzo(b)fluoranthene	ND		ug/l	10.0	--
Benzo(k)fluoranthene	ND		ug/l	10.0	--
Benzo(a)pyrene	ND		ug/l	10.0	--
Indeno(1,2,3-cd)Pyrene	ND		ug/l	10.0	--
Dibenzo(a,h)anthracene	ND		ug/l	10.0	--
Benzo(ghi)perylene	ND		ug/l	10.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	55		40-140
o-Terphenyl	52		40-140
2-Fluorobiphenyl	73		40-140
2-Bromonaphthalene	73		40-140



Lab Control Sample Analysis

Batch Quality Control

Project Name: TOMBARELLO

Lab Number: L2001201

Project Number: 17001426

Report Date: 01/17/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-02 Batch: WG1329244-2 WG1329244-3								
C9-C18 Aliphatics	70		55		40-140	24		25
C19-C36 Aliphatics	75		77		40-140	3		25
C11-C22 Aromatics	72		55		40-140	27	Q	25
Naphthalene	56		37	Q	40-140	41	Q	25
2-Methylnaphthalene	61		43		40-140	35	Q	25
Acenaphthylene	62		46		40-140	30	Q	25
Acenaphthene	67		50		40-140	29	Q	25
Fluorene	68		52		40-140	27	Q	25
Phenanthrene	72		54		40-140	29	Q	25
Anthracene	73		55		40-140	28	Q	25
Fluoranthene	73		56		40-140	26	Q	25
Pyrene	76		57		40-140	29	Q	25
Benzo(a)anthracene	74		57		40-140	26	Q	25
Chrysene	73		56		40-140	26	Q	25
Benzo(b)fluoranthene	74		57		40-140	26	Q	25
Benzo(k)fluoranthene	72		55		40-140	27	Q	25
Benzo(a)pyrene	70		55		40-140	24		25
Indeno(1,2,3-cd)Pyrene	66		53		40-140	22		25
Dibenzo(a,h)anthracene	65		52		40-140	22		25
Benzo(ghi)perylene	60		49		40-140	20		25
Nonane (C9)	50		20	Q	30-140	86	Q	25
Decane (C10)	57		30	Q	40-140	62	Q	25
Dodecane (C12)	59		50		40-140	17		25

Lab Control Sample Analysis Batch Quality Control

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-02 Batch: WG1329244-2 WG1329244-3								
Tetradecane (C14)	63		63		40-140	0		25
Hexadecane (C16)	68		70		40-140	3		25
Octadecane (C18)	72		74		40-140	3		25
Nonadecane (C19)	71		73		40-140	3		25
Eicosane (C20)	73		75		40-140	3		25
Docosane (C22)	74		76		40-140	3		25
Tetracosane (C24)	72		74		40-140	3		25
Hexacosane (C26)	72		74		40-140	3		25
Octacosane (C28)	72		74		40-140	3		25
triacontane (C30)	72		74		40-140	3		25
Hexatriacontane (C36)	72		78		40-140	8		25

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Chloro-Octadecane	67		67		40-140
o-Terphenyl	72		53		40-140
2-Fluorobiphenyl	82		64		40-140
2-Bromonaphthalene	83		64		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		



Project Name: TOMBARELLO

Project Number: 17001426

Serial_No:01172014:56

Lab Number: L2001201

Report Date: 01/17/20

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**

A Absent

Container Information

Container ID **Container Type**

Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
A	<2	<2	4.5	Y	Absent		EPH-DELUX-10(14)
A	<2	<2	4.5	Y	Absent		EPH-DELUX-10(14)

L2001201-01A Amber 1000ml HCl preserved

L2001201-02A Amber 1000ml HCl preserved

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report



Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less

Report Format: Data Usability Report



Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

Data Qualifiers

than 5x the RL. (Metals only.)

- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: TOMBARELLO
Project Number: 17001426

Lab Number: L2001201
Report Date: 01/17/20

REFERENCES

- 98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix H

Laboratory Data Reports – Concrete



CERTIFICATE OF ANALYSIS

Leslie Lombardo
 GEI Consultants, Inc.
 400 Unicorn Park Drive
 Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 19H0306

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
 Laboratory Director

REVIEWED
By ESS Laboratory at 3:15 pm, Aug 16, 2019

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

SAMPLE RECEIPT

The following samples were received on August 09, 2019 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
19H0306-01	1802441-EB-08	Aqueous	8082A



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **19H0306-01**

Matrices: () Ground Water/Surface Water () Soil/Sediment () Drinking Water () Air (X) Other: Equipment Blank

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 | (X) 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 | () 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 (X) No ()
- B Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? Yes (X) 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 (X) No ()
- D Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"? Yes (X) No ()
- E VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes () No ()
b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? 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 (X) 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 protocols(s)? Yes (X) No ()*
- 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 (X) No ()*
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes (X) No ()*

**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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 15, 2019
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-EB-08
Date Sampled: 08/08/19 07:40
Percent Solids: N/A
Initial Volume: 1050
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 19H0306
ESS Laboratory Sample ID: 19H0306-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MJV
Prepared: 8/10/19 10:45

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1221	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1232	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1242	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1248	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1254	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1260	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1262	ND (0.10)		8082A		1	08/12/19 17:10		CH90904
Aroclor 1268	ND (0.10)		8082A		1	08/12/19 17:10		CH90904

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	73 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	69 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	60 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	69 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH90904 - 3510C

Blank

Aroclor 1016	ND	0.05	ug/L							
Aroclor 1016 [2C]	ND	0.05	ug/L							
Aroclor 1221	ND	0.05	ug/L							
Aroclor 1221 [2C]	ND	0.05	ug/L							
Aroclor 1232	ND	0.05	ug/L							
Aroclor 1232 [2C]	ND	0.05	ug/L							
Aroclor 1242	ND	0.05	ug/L							
Aroclor 1242 [2C]	ND	0.05	ug/L							
Aroclor 1248	ND	0.05	ug/L							
Aroclor 1248 [2C]	ND	0.05	ug/L							
Aroclor 1254	ND	0.05	ug/L							
Aroclor 1254 [2C]	ND	0.05	ug/L							
Aroclor 1260	ND	0.05	ug/L							
Aroclor 1260 [2C]	ND	0.05	ug/L							
Aroclor 1262	ND	0.05	ug/L							
Aroclor 1262 [2C]	ND	0.05	ug/L							
Aroclor 1268	ND	0.05	ug/L							
Aroclor 1268 [2C]	ND	0.05	ug/L							
<hr/>										
Surrogate: Decachlorobiphenyl	0.0371		ug/L	0.05000		74	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0341		ug/L	0.05000		68	30-150			
Surrogate: Tetrachloro-m-xylene	0.0230		ug/L	0.05000		46	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0239		ug/L	0.05000		48	30-150			

LCS

Aroclor 1016	0.75	0.10	ug/L	1.000		75	40-140			
Aroclor 1016 [2C]	0.76	0.10	ug/L	1.000		76	40-140			
Aroclor 1260	0.90	0.10	ug/L	1.000		90	40-140			
Aroclor 1260 [2C]	0.96	0.10	ug/L	1.000		96	40-140			
<hr/>										
Surrogate: Decachlorobiphenyl	0.0502		ug/L	0.05000		100	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0468		ug/L	0.05000		94	30-150			
Surrogate: Tetrachloro-m-xylene	0.0276		ug/L	0.05000		55	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0292		ug/L	0.05000		58	30-150			

LCS Dup

Aroclor 1016	0.85	0.10	ug/L	1.000		85	40-140	12	20	
Aroclor 1016 [2C]	0.85	0.10	ug/L	1.000		85	40-140	10	20	
Aroclor 1260	0.95	0.10	ug/L	1.000		95	40-140	6	20	
Aroclor 1260 [2C]	1.02	0.10	ug/L	1.000		102	40-140	6	20	
<hr/>										
Surrogate: Decachlorobiphenyl	0.0497		ug/L	0.05000		99	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0466		ug/L	0.05000		93	30-150			
Surrogate: Tetrachloro-m-xylene	0.0297		ug/L	0.05000		59	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0315		ug/L	0.05000		63	30-150			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

Notes and Definitions

- U Analyte included in the analysis, but not detected
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0306

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/meecd/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM
 Shipped/Delivered Via: ESS Courier

ESS Project ID: 19H0306
 Date Received: 8/9/2019
 Project Due Date: 8/16/2019
 Days for Project: 5 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? No
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? Yes
Temp: -2.9 Iced with: Ice
ndm 8/14/19
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? Yes
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about **short holds & rushes**? Yes / No / NA
- 10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes / No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
 a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
 b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:


14. Was there a need to contact Project Manager? Yes / No
 a. Was there a need to contact the client? Yes / No
 Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	375947	Yes	NA	Yes	1L Amber - Unpres	NP	

2nd Review

Were all containers scanned into storage/lab? Initials W
 Are barcode labels on correct containers? Yes / No
 Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
 Are all Hex Chrome stickers attached? Yes / No / NA
 Are all QC stickers attached? Yes / No / NA
 Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [Signature] Date & Time: 8/9/19 1843
 Reviewed By: [Signature] Date & Time: 8/9/19 2015
 Delivered By: [Signature] Date & Time: 8/9/19 2015

 400 Unicorn Park Drive Woburn, MA 01801 PH: 781.721.4000 FX: 781.721.4073	Project Information		Project Location: Lawrence, MA Project Manager: L. Lombardo	Page 1 of 3 Sample Handling Samples Field Filtered YES NO <input checked="" type="radio"/> NA Sampled Shipped With Ice YES NO <input checked="" type="radio"/> NO Sample Specific Remarks
	Project Name: Tombarello Site Investigation			
	Project Number: 1802441		Send Report to: llombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaledas@geiconsultants.com, blee@geiconsultants.com Send EDD to: EastRegionData@geiconsultants.com	

MCP PRESUMPTIVE CERTAINTY REQUIRED YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)	PCBs (aqueous)	Sample Specific Remarks
		Date	Time								
	1802441-EB-08	8/8/2019	0740	Aqueous	1	CWS				x	Equipment Blank
	1802441-FD-17	8/8/2019	1201	Concrete	1	CWS	x				Field Duplicate
	1802441-ECP-2A	8/8/2019	0750	Concrete	1	BRL	x				
	1802441-ECP-2B	8/8/2019	0755	Concrete	1	CWS		x	x		
	1802441-LGSP-1A	8/8/2019	0830	Concrete	1	CWS	x				
	1802441-LGSP-1B	8/8/2019	0835	Concrete	1	CWS		x	x		
	1802441-LGSP-2A	8/8/2019	0845	Concrete	1	CWS	x				
	1802441-LGSP-2B	8/8/2019	0850	Concrete	1	CWS		x	x		
	1802441-LGSP-3A	8/8/2019	0900	Concrete	1	CWS	x				
	1802441-LGSP-3B	8/8/2019	0905	Concrete	1	CWS		x	x		
	1802441-LGSP-4A	8/8/2019	0915	Concrete	1	CWS	x				
	1802441-LGSP-4B	8/8/2019	0920	Concrete	1	CWS		x	x		
	1802441-LGSP-5A	8/8/2019	0925	Concrete	1	CWS	x				

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by: (signature)	Date:	Time:	Received by: (signature)
1.	8/8/2019	1530	1. GEI Refrigerator
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
2.	8/9/19	1100	2.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
3.	8/9/19	1100	3.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
4.	8/9/19	17:47	4. 8/9/19 1830

Turnaround Time (Business days):

Normal Other _____

10-Day _____ 7-Day _____

5-Day _____ 3-Day _____

Additional Requirements/Comments/Remarks:

Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Ice temp: 2.2



CERTIFICATE OF ANALYSIS

Leslie Lombardo
 GEI Consultants, Inc.
 400 Unicorn Park Drive
 Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 19H0316

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
 Laboratory Director

REVIEWED
 By ESS Laboratory at 3:50 pm, Sep 24, 2019

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

SAMPLE RECEIPT

The following samples were received on August 09, 2019 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 September 19, 2019: This report has been revised to include Metals MS/MSD on 19H0316-03 per client's request .

Lab Number	Sample Name	Matrix	Analysis
19H0316-01	1802441-FD-17	Soil	8082A
19H0316-02	1802441-ECP-2A	Soil	8082A
19H0316-03	1802441-ECP-2B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0316-04	1802441-LGSP-1A	Soil	8082A
19H0316-05	1802441-LGSP-1B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0316-06	1802441-LGSP-2A	Soil	8082A
19H0316-07	1802441-LGSP-2B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0316-08	1802441-LGSP-3A	Soil	8082A
19H0316-09	1802441-LGSP-3B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0316-10	1802441-LGSP-4A	Soil	8082A
19H0316-11	1802441-LGSP-4B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0316-12	1802441-LGSP-5A	Soil	8082A



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

- C9H0292-CCV2 [Continuing Calibration %Diff/Drift is above control limit \(CD+\).](#)
Benzo(g,h,i)perylene (31% @ 20%), Indeno(1,2,3-cd)Pyrene (30% @ 20%)
- C9H0292-CCV2 [Continuing Calibration %Diff/Drift is below control limit \(CD-\).](#)
2-Methylnaphthalene (23% @ 20%), Naphthalene (32% @ 20%)

Total Metals

- 19H0316-03 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0316-05 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0316-07 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0316-09 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Arsenic , Selenium
- 19H0316-11 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Arsenic , Selenium
- CH91335-MS3 [Matrix Spike recovery is above upper control limit \(M+\).](#)
Arsenic (245% @ 75-125%)
- CH91335-MS3 [Matrix Spike recovery is below lower control limit \(M-\).](#)
Barium (-30% @ 75-125%), Cadmium (36% @ 75-125%), Chromium (-13% @ 75-125%), Silver (17% @ 75-125%), Zinc (0.9% @ 75-125%)
- CH91335-MSD3 [Matrix Spike recovery is above upper control limit \(M+\).](#)
Arsenic (251% @ 75-125%), Lead (148% @ 75-125%)
- CH91335-MSD3 [Matrix Spike recovery is below lower control limit \(M-\).](#)
Barium (-28% @ 75-125%), Cadmium (35% @ 75-125%), Chromium (-3% @ 75-125%), Silver (13% @ 75-125%), Zinc (12% @ 75-125%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **19H0316-01 through 19H0316-12**

Matrices: () Ground Water/Surface Water Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|--|---|--|---|--|---|
| <input type="checkbox"/> 8260 VOC
CAM II A | <input checked="" type="checkbox"/> 7470/7471 Hg
CAM III B | <input type="checkbox"/> MassDEP VPH
(GC/PID/FID)
CAM IV A | <input type="checkbox"/> 8082 PCB
CAM V A | <input type="checkbox"/> 9014 Total
Cyanide/PAC
CAM VI A | <input type="checkbox"/> 6860 Perchlorate
CAM VIII B |
| <input type="checkbox"/> 8270 SVOC
CAM II B | <input type="checkbox"/> 7010 Metals
CAM III C | <input type="checkbox"/> MassDEP VPH
(GC/MS)
CAM IV C | <input type="checkbox"/> 8081 Pesticides
CAM V B | <input type="checkbox"/> 7196 Hex Cr
CAM VI B | <input type="checkbox"/> MassDEP APH
CAM IX A |
| <input checked="" type="checkbox"/> 6010 Metals
CAM III A | <input checked="" type="checkbox"/> 6020 Metals
CAM III D | <input checked="" type="checkbox"/> MassDEP EPH
CAM IV B | <input type="checkbox"/> 8151 Herbicides
CAM V C | <input type="checkbox"/> Explosives
CAM VIII A | <input type="checkbox"/> 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 <input checked="" type="checkbox"/> No () |
| B | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | Yes <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> No () |
| D | Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"? | Yes <input checked="" type="checkbox"/> No () |
| E | VPH, EPH, APH and TO-15 only: a. 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 <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> 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 protocols(s)?
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. | Yes () No <input checked="" type="checkbox"/> * |
| H | Were all QC performance standards specified in the CAM protocol(s) achieved? | Yes () No <input checked="" type="checkbox"/> * |
| I | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | Yes () No <input checked="" type="checkbox"/> * |

*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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 23, 2019
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-FD-17
Date Sampled: 08/08/19 12:01
Percent Solids: 98
Initial Volume: 5.04
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1242 [2C]	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1254 [2C]	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1260	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 21:16		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 21:16		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	34 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	39 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	32 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	38 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-ECP-2A
Date Sampled: 08/08/19 07:50
Percent Solids: 94
Initial Volume: 5.21
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1242 [2C]	0.6 (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1260	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 21:35		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 21:35		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	45 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	55 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	46 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	59 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-ECP-2B
Date Sampled: 08/08/19 07:55
Percent Solids: 96

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (4.91)		6010C		2	KJK	08/19/19 15:13	2.13	100	CH91335
Barium	32.6 (2.45)		6010C		1	KJK	08/16/19 21:15	2.13	100	CH91335
Cadmium	1.08 (0.98)		6010C		2	KJK	08/19/19 15:13	2.13	100	CH91335
Cadmium	ND (0.98)		6020A		2	NAR	08/19/19 20:57	2.13	100	CH91335
Chromium	29.0 (0.98)		6010C		1	KJK	08/16/19 21:15	2.13	100	CH91335
Lead	6.51 (0.98)		6020A		2	NAR	08/19/19 20:57	2.13	100	CH91335
Mercury	ND (0.032)		7471B		1	MKS	08/15/19 10:47	0.64	40	CH91336
Selenium	EL ND (9.81)		6020A		2	NAR	08/19/19 20:57	2.13	100	CH91335
Zinc	28.2 (2.45)		6010C		1	KJK	08/16/19 21:15	2.13	100	CH91335



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-ECP-2B
Date Sampled: 08/08/19 07:55
Percent Solids: 96
Initial Volume: 25.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	18.8 (15.2)		MADEP-EPH		1	CAD	08/13/19 22:40	C9H0241	CH91208
C19-C36 Aliphatics1	675 (15.2)		MADEP-EPH		1	CAD	08/13/19 22:40	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	47.4 (15.2)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
C11-C22 Aromatics1,2	47.4 (15.2)		EPH8270			VSC	08/18/19 1:07		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Acenaphthene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Naphthalene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Phenanthrene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Benzo(a)anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Benzo(a)pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Chrysene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Fluorene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208
Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 1:07	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	101 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	108 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	105 %		40-140
<i>Surrogate: O-Terphenyl</i>	83 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-1A
Date Sampled: 08/08/19 08:30
Percent Solids: 96
Initial Volume: 5.12
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1260	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 21:54		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 21:54		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	42 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	42 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	36 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	42 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-1B
Date Sampled: 08/08/19 08:35
Percent Solids: 96

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.32)		6010C		1	KJK	08/16/19 21:20	2.24	100	CH91335
Barium	36.6 (2.32)		6010C		1	KJK	08/16/19 21:20	2.24	100	CH91335
Cadmium	ND (0.46)		6020A		1	NAR	08/19/19 21:01	2.24	100	CH91335
Chromium	27.7 (0.93)		6010C		1	KJK	08/16/19 21:20	2.24	100	CH91335
Lead	5.66 (0.46)		6020A		1	NAR	08/19/19 21:01	2.24	100	CH91335
Mercury	ND (0.031)		7471B		1	MKS	08/15/19 10:49	0.67	40	CH91336
Selenium	EL ND (4.65)		6020A		1	NAR	08/19/19 21:01	2.24	100	CH91335
Silver	ND (0.46)		6010C		1	KJK	08/16/19 21:20	2.24	100	CH91335
Zinc	32.0 (2.32)		6010C		1	KJK	08/16/19 21:20	2.24	100	CH91335



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-1B
Date Sampled: 08/08/19 08:35
Percent Solids: 96
Initial Volume: 24.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	119 (15.7)		MADEP-EPH		1	CAD	08/13/19 23:27	C9H0241	CH91208
C19-C36 Aliphatics1	276 (15.7)		MADEP-EPH		1	CAD	08/13/19 23:27	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	35.5 (15.7)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
C11-C22 Aromatics1,2	35.5 (15.7)		EPH8270			VSC	08/18/19 1:44		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 1:44	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	93 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	103 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	100 %		40-140
<i>Surrogate: O-Terphenyl</i>	81 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-2A
Date Sampled: 08/08/19 08:45
Percent Solids: 98
Initial Volume: 5.08
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/15/19 21:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1221	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1232	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1242 [2C]	0.2 (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1248	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1254	0.3 (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1260 [2C]	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1262	ND (0.1)		8082A		1	08/16/19 18:47		CH91506
Aroclor 1268	ND (0.1)		8082A		1	08/16/19 18:47		CH91506

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	56 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	62 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	55 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	56 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-2B
Date Sampled: 08/08/19 08:50
Percent Solids: 97

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	11.8 (11.2)		6010C		5	KJK	08/19/19 15:22	2.31	100	CH91335
Barium	81.2 (11.2)		6010C		5	KJK	08/16/19 21:25	2.31	100	CH91335
Cadmium	ND (0.45)		6020A		1	NAR	08/19/19 21:06	2.31	100	CH91335
Chromium	18.7 (4.47)		6010C		5	KJK	08/16/19 21:25	2.31	100	CH91335
Lead	7.78 (0.45)		6020A		1	NAR	08/19/19 21:06	2.31	100	CH91335
Mercury	ND (0.028)		7471B		1	MKS	08/15/19 10:51	0.74	40	CH91336
Selenium	EL ND (4.47)		6020A		1	NAR	08/19/19 21:06	2.31	100	CH91335
Silver	ND (0.45)		6020A		1	NAR	08/19/19 21:06	2.31	100	CH91335
Zinc	46.8 (11.2)		6010C		5	KJK	08/16/19 21:25	2.31	100	CH91335



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-2B
Date Sampled: 08/08/19 08:50
Percent Solids: 97
Initial Volume: 24.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-07
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.7)		MADEP-EPH		1	CAD	08/14/19 0:14	C9H0241	CH91208
C19-C36 Aliphatics1	242 (15.7)		MADEP-EPH		1	CAD	08/14/19 0:14	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.7)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
C11-C22 Aromatics1,2	ND (15.7)		EPH8270			VSC	08/18/19 2:20		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:20	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	85 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	97 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	93 %		40-140
<i>Surrogate: O-Terphenyl</i>	82 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-3A
Date Sampled: 08/08/19 09:00
Percent Solids: 96
Initial Volume: 5.19
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/15/19 21:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1221	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1232	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1242	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1248	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1254	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1260	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1262	ND (0.1)		8082A		1	08/16/19 19:06		CH91506
Aroclor 1268	ND (0.1)		8082A		1	08/16/19 19:06		CH91506

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	69 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	69 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	58 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	62 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-3B
Date Sampled: 08/08/19 09:05
Percent Solids: 95

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	EL ND (12.5)		6010C		5	KJK	08/16/19 21:29	2.12	100	CH91335
Barium	80.3 (12.5)		6010C		5	KJK	08/16/19 21:29	2.12	100	CH91335
Cadmium	ND (0.50)		6020A		1	NAR	08/19/19 21:21	2.12	100	CH91335
Chromium	20.4 (4.99)		6010C		5	KJK	08/16/19 21:29	2.12	100	CH91335
Lead	8.96 (0.50)		6020A		1	NAR	08/19/19 21:21	2.12	100	CH91335
Mercury	ND (0.030)		7471B		1	MKS	08/15/19 10:53	0.71	40	CH91336
Selenium	EL ND (4.99)		6020A		1	NAR	08/19/19 21:21	2.12	100	CH91335
Silver	ND (0.50)		6020A		1	NAR	08/19/19 21:21	2.12	100	CH91335
Zinc	41.5 (12.5)		6010C		5	KJK	08/16/19 21:29	2.12	100	CH91335



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-3B
Date Sampled: 08/08/19 09:05
Percent Solids: 95
Initial Volume: 24.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-09
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.9)		MADEP-EPH		1	CAD	08/14/19 1:01	C9H0241	CH91208
C19-C36 Aliphatics1	ND (15.9)		MADEP-EPH		1	CAD	08/14/19 1:01	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.9)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
C11-C22 Aromatics1,2	ND (15.9)		EPH8270			VSC	08/18/19 2:57		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 2:57	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	67 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	100 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	96 %		40-140
<i>Surrogate: O-Terphenyl</i>	70 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-4A
Date Sampled: 08/08/19 09:15
Percent Solids: 99
Initial Volume: 5.34
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1221	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1232	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1242	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1248	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1254	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1260	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1262	ND (0.09)		8082A		1	08/14/19 22:52		CH91305
Aroclor 1268	ND (0.09)		8082A		1	08/14/19 22:52		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	33 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	41 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	34 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	41 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-4B
Date Sampled: 08/08/19 09:20
Percent Solids: 97

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	EL ND (11.3)		6010C		5	KJK	08/16/19 21:33	2.29	100	CH91335
Barium	88.2 (11.3)		6010C		5	KJK	08/16/19 21:33	2.29	100	CH91335
Cadmium	ND (0.45)		6020A		1	NAR	08/19/19 21:26	2.29	100	CH91335
Chromium	25.5 (4.51)		6010C		5	KJK	08/16/19 21:33	2.29	100	CH91335
Lead	4.84 (0.45)		6020A		1	NAR	08/19/19 21:26	2.29	100	CH91335
Mercury	ND (0.026)		7471B		1	MKS	08/15/19 10:55	0.78	40	CH91336
Selenium	EL ND (4.51)		6020A		1	NAR	08/19/19 21:26	2.29	100	CH91335
Silver	ND (0.45)		6020A		1	NAR	08/19/19 21:26	2.29	100	CH91335
Zinc	50.3 (11.3)		6010C		5	KJK	08/16/19 21:33	2.29	100	CH91335



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-4B
Date Sampled: 08/08/19 09:20
Percent Solids: 97
Initial Volume: 24.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-11
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.8)		MADEP-EPH		1	CAD	08/14/19 1:48	C9H0241	CH91208
C19-C36 Aliphatics1	159 (15.8)		MADEP-EPH		1	CAD	08/14/19 1:48	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.8)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
C11-C22 Aromatics1,2	ND (15.8)		EPH8270			VSC	08/18/19 3:33		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 3:33	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	64 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	98 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	96 %		40-140
<i>Surrogate: O-Terphenyl</i>	72 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-5A
Date Sampled: 08/08/19 09:25
Percent Solids: 99
Initial Volume: 5.32
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0316
ESS Laboratory Sample ID: 19H0316-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1254 [2C]	0.1 (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1260 [2C]	0.1 (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 23:11		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 23:11		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	47 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	58 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	56 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	67 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CH91335 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet
Barium	ND	2.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.00	mg/kg wet
Lead	ND	0.50	mg/kg wet
Selenium	ND	5.00	mg/kg wet
Silver	ND	0.50	mg/kg wet
Silver	ND	0.50	mg/kg wet
Zinc	ND	2.50	mg/kg wet

LCS

Arsenic	128	8.62	mg/kg wet	128.0	100	80-120
Barium	555	8.62	mg/kg wet	536.0	104	80-120
Cadmium	89.2	1.72	mg/kg wet	99.00	90	80-120
Cadmium	85.0	8.62	mg/kg wet	99.00	86	80-120
Chromium	115	3.45	mg/kg wet	116.0	99	80-120
Lead	264	8.62	mg/kg wet	277.0	95	80-120
Selenium	240	86.2	mg/kg wet	242.0	99	80-120
Silver	65.3	1.72	mg/kg wet	64.30	102	80-120
Silver	62.3	8.62	mg/kg wet	64.30	97	80-120
Zinc	573	8.62	mg/kg wet	561.0	102	80-120

LCS Dup

Arsenic	131	8.77	mg/kg wet	128.0	102	80-120	2	20
Barium	577	8.77	mg/kg wet	536.0	108	80-120	4	20
Cadmium	89.9	8.77	mg/kg wet	99.00	91	80-120	6	30
Cadmium	89.3	1.75	mg/kg wet	99.00	90	80-120	0.2	20
Chromium	116	3.51	mg/kg wet	116.0	100	80-120	0.9	20
Lead	270	8.77	mg/kg wet	277.0	98	80-120	3	30
Selenium	240	87.7	mg/kg wet	242.0	99	80-120	0.02	30
Silver	65.6	8.77	mg/kg wet	64.30	102	80-120	5	30
Silver	65.3	1.75	mg/kg wet	64.30	102	80-120	0.05	20
Zinc	576	8.77	mg/kg wet	561.0	103	80-120	0.6	20

Matrix Spike Source: 19H0316-03

Arsenic	25.3	1.03	mg/kg dry	10.33	ND	245	75-125		M+
Barium	29.6	1.03	mg/kg dry	10.33	32.6	NR	75-125		M-
Cadmium	2.96	0.21	mg/kg dry	5.163	1.08	36	75-125		M-
Chromium	27.6	0.41	mg/kg dry	10.33	29.0	NR	75-125		M-
Lead	19.3	2.58	mg/kg dry	10.33	6.51	124	75-125		
Selenium	18.4	2.58	mg/kg dry	20.65	ND	89	75-125		
Silver	1.03	0.21	mg/kg dry	5.163	0.137	17	75-125		M-
Zinc	28.2	1.03	mg/kg dry	10.33	28.2	0.9	75-125		M-

Matrix Spike Dup Source: 19H0316-03

Arsenic	23.4	0.93	mg/kg dry	9.329	ND	251	75-125	8	35	M+
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CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CH91335 - 3050B

Barium	30.0	0.93	mg/kg dry	9.329	32.6	NR	75-125	1	35	M-
Cadmium	2.73	0.19	mg/kg dry	4.665	1.08	35	75-125	8	35	M-
Chromium	28.7	0.37	mg/kg dry	9.329	29.0	NR	75-125	4	35	M-
Lead	20.3	2.33	mg/kg dry	9.329	6.51	148	75-125	5	35	M+
Selenium	16.4	2.33	mg/kg dry	18.66	ND	88	75-125	11	35	
Silver	0.736	0.19	mg/kg dry	4.665	0.137	13	75-125	34	35	M-
Zinc	29.2	0.93	mg/kg dry	9.329	28.2	12	75-125	3	35	M-

Batch CH91336 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet							
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LCS

Mercury	22.5	3.67	mg/kg wet	27.30		83	80-120			
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LCS Dup

Mercury	24.0	3.67	mg/kg wet	27.30		88	80-120	6	20	
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Matrix Spike Source: 19H0316-03

Mercury	0.191	0.028	mg/kg dry	0.1684	ND	113	75-125			
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Matrix Spike Dup Source: 19H0316-03

Mercury	0.194	0.030	mg/kg dry	0.1804	ND	107	75-125	2	35	
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91305 - 3540C

Blank

Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0203		mg/kg wet	0.02500		81	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0216		mg/kg wet	0.02500		86	30-150			
Surrogate: Tetrachloro-m-xylene	0.0167		mg/kg wet	0.02500		67	30-150			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91305 - 3540C

<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0217		mg/kg wet	0.02500		87	30-150			
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LCS

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		105	40-140			
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		101	40-140			
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		95	40-140			

<i>Surrogate: Decachlorobiphenyl</i>	0.0230		mg/kg wet	0.02500		92	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0242		mg/kg wet	0.02500		97	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0205		mg/kg wet	0.02500		82	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0243		mg/kg wet	0.02500		97	30-150			

LCS Dup

Aroclor 1016	0.4	0.02	mg/kg wet	0.5000		86	40-140	5	30	
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		97	40-140	9	30	
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		97	40-140	3	30	
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		91	40-140	4	30	

<i>Surrogate: Decachlorobiphenyl</i>	0.0219		mg/kg wet	0.02500		88	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0232		mg/kg wet	0.02500		93	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0189		mg/kg wet	0.02500		75	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0212		mg/kg wet	0.02500		85	30-150			

Batch CH91506 - 3540C

Blank

Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							

<i>Surrogate: Decachlorobiphenyl</i>	0.0228		mg/kg wet	0.02500		91	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0228		mg/kg wet	0.02500		91	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0179		mg/kg wet	0.02500		72	30-150			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91506 - 3540C

<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0186		mg/kg wet	0.02500		75	30-150			
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LCS

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		91	40-140			
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1260 [2C]	0.4	0.02	mg/kg wet	0.5000		88	40-140			

<i>Surrogate: Decachlorobiphenyl</i>	0.0231		mg/kg wet	0.02500		92	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0228		mg/kg wet	0.02500		91	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0181		mg/kg wet	0.02500		72	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0182		mg/kg wet	0.02500		73	30-150			

LCS Dup

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		94	40-140	4	30	
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		93	40-140	3	30	
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		92	40-140	2	30	
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		90	40-140	3	30	

<i>Surrogate: Decachlorobiphenyl</i>	0.0237		mg/kg wet	0.02500		95	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0235		mg/kg wet	0.02500		94	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0191		mg/kg wet	0.02500		77	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0195		mg/kg wet	0.02500		78	30-150			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH91208 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	1.72		mg/kg wet	2.020		85	40-140			
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Blank



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH91208 - 3546

2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	50.6		mg/L	50.00		101	40-140			
Surrogate: 2-Fluorobiphenyl	49.3		mg/L	50.00		99	40-140			
Surrogate: O-Terphenyl	1.93		mg/kg wet	2.008		96	40-140			

LCS

C19-C36 Aliphatics1	15.3	15.0	mg/kg wet	16.00		96	40-140			
C9-C18 Aliphatics1	9.4	15.0	mg/kg wet	12.00		78	40-140			
Decane (C10)	1.1	0.5	mg/kg wet	2.000		57	40-140			
Docosane (C22)	1.8	0.5	mg/kg wet	2.000		88	40-140			
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		61	40-140			
Eicosane (C20)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Hexacosane (C26)	1.7	0.5	mg/kg wet	2.000		87	40-140			
Hexadecane (C16)	1.5	0.5	mg/kg wet	2.000		77	40-140			
Hexatriacontane (C36)	1.6	0.5	mg/kg wet	2.000		79	40-140			
Nonadecane (C19)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		47	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		88	40-140			
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		83	40-140			

Surrogate: 1-Chlorooctadecane	1.69		mg/kg wet	2.020		84	40-140			
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LCS

2-Methylnaphthalene	1.49	0.20	mg/kg wet	2.000		74	40-140			
Acenaphthene	1.50	0.40	mg/kg wet	2.000		75	40-140			
Acenaphthylene	1.48	0.20	mg/kg wet	2.000		74	40-140			
Anthracene	1.66	0.40	mg/kg wet	2.000		83	40-140			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH91208 - 3546

Benzo(a)anthracene	2.18	0.40	mg/kg wet	2.000		109	40-140			
Benzo(a)pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140			
Benzo(b)fluoranthene	2.10	0.40	mg/kg wet	2.000		105	40-140			
Benzo(g,h,i)perylene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Benzo(k)fluoranthene	2.07	0.40	mg/kg wet	2.000		104	40-140			
C11-C22 Unadjusted Aromatics1	31.3	15.0	mg/kg wet	34.00		92	40-140			
Chrysene	2.08	0.40	mg/kg wet	2.000		104	40-140			
Dibenzo(a,h)Anthracene	1.95	0.20	mg/kg wet	2.000		98	40-140			
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Fluorene	1.64	0.40	mg/kg wet	2.000		82	40-140			
Indeno(1,2,3-cd)Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Naphthalene	1.18	0.40	mg/kg wet	2.000		59	40-140			
Phenanthrene	1.78	0.40	mg/kg wet	2.000		89	40-140			
Pyrene	1.86	0.40	mg/kg wet	2.000		93	40-140			
Surrogate: 2-Bromonaphthalene	50.1		mg/L	50.00		100	40-140			
Surrogate: 2-Fluorobiphenyl	48.0		mg/L	50.00		96	40-140			
Surrogate: O-Terphenyl	1.95		mg/kg wet	2.008		97	40-140			

LCS

2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			

LCS Dup

C19-C36 Aliphatics1	14.3	15.0	mg/kg wet	16.00		89	40-140	7	25	
C9-C18 Aliphatics1	8.9	15.0	mg/kg wet	12.00		74	40-140	5	25	
Decane (C10)	1.1	0.5	mg/kg wet	2.000		54	40-140	6	25	
Docosane (C22)	1.6	0.5	mg/kg wet	2.000		82	40-140	6	25	
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		58	40-140	5	25	
Eicosane (C20)	1.6	0.5	mg/kg wet	2.000		80	40-140	7	25	
Hexacosane (C26)	1.6	0.5	mg/kg wet	2.000		81	40-140	6	25	
Hexadecane (C16)	1.4	0.5	mg/kg wet	2.000		72	40-140	7	25	
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		74	40-140	7	25	
Nonadecane (C19)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		45	30-140	4	25	
Octacosane (C28)	1.6	0.5	mg/kg wet	2.000		80	40-140	7	25	
Octadecane (C18)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Tetracosane (C24)	1.6	0.5	mg/kg wet	2.000		82	40-140	6	25	
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		65	40-140	4	25	
Triacontane (C30)	1.6	0.5	mg/kg wet	2.000		78	40-140	7	25	

Surrogate: 1-Chlorooctadecane	1.59		mg/kg wet	2.020		79	40-140			
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LCS Dup

2-Methylnaphthalene	1.32	0.20	mg/kg wet	2.000		66	40-140	12	30	
Acenaphthene	1.36	0.40	mg/kg wet	2.000		68	40-140	10	30	
Acenaphthylene	1.32	0.20	mg/kg wet	2.000		66	40-140	11	30	
Anthracene	1.53	0.40	mg/kg wet	2.000		76	40-140	8	30	
Benzo(a)anthracene	1.93	0.40	mg/kg wet	2.000		97	40-140	12	30	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CH91208 - 3546										
Benzo(a)pyrene	1.62	0.40	mg/kg wet	2.000		81	40-140	12	30	
Benzo(b)fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140	14	30	
Benzo(g,h,i)perylene	1.61	0.40	mg/kg wet	2.000		81	40-140	13	30	
Benzo(k)fluoranthene	1.77	0.40	mg/kg wet	2.000		89	40-140	15	30	
C11-C22 Unadjusted Aromatics1	27.5	15.0	mg/kg wet	34.00		81	40-140	13	25	
Chrysene	1.83	0.40	mg/kg wet	2.000		91	40-140	13	30	
Dibenzo(a,h)Anthracene	1.64	0.20	mg/kg wet	2.000		82	40-140	18	30	
Fluoranthene	1.71	0.40	mg/kg wet	2.000		85	40-140	7	30	
Fluorene	1.48	0.40	mg/kg wet	2.000		74	40-140	10	30	
Indeno(1,2,3-cd)Pyrene	1.70	0.40	mg/kg wet	2.000		85	40-140	13	30	
Naphthalene	1.15	0.40	mg/kg wet	2.000		57	40-140	3	30	
Phenanthrene	1.53	0.40	mg/kg wet	2.000		77	40-140	15	30	
Pyrene	1.67	0.40	mg/kg wet	2.000		83	40-140	11	30	
Surrogate: 2-Bromonaphthalene	46.6		mg/L	50.00		93	40-140			
Surrogate: 2-Fluorobiphenyl	43.3		mg/L	50.00		87	40-140			
Surrogate: O-Terphenyl	1.72		mg/kg wet	2.008		86	40-140			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

Notes and Definitions

- U Analyte included in the analysis, but not detected
- M+ Matrix Spike recovery is above upper control limit (M+).
- M- Matrix Spike recovery is below lower control limit (M-).
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0316

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

ESS Project ID: 19H0316

Date Received: 8/9/2019

Shipped/Delivered Via: ESS Courier

Project Due Date: 8/16/2019

Days for Project: 5 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? No
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? Yes
Temp: 2.2 Iced with: Ice
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? Yes
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about short holds & rushes? Yes / No NA
- 10. Were any analyses received outside of hold time? Yes No

- 11. Any Subcontracting needed? Yes No
- ESS Sample IDs: _____
- Analysis: _____
- TAT: _____

- 12. Were VOAs received? Yes No
- a. Air bubbles in aqueous VOAs? Yes / No
- b. Does methanol cover soil completely? Yes / No / NA

- 13. Are the samples properly preserved? Yes / No
- a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
- b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

- 14. Was there a need to contact Project Manager? Yes / No
- a. Was there a need to contact the client? Yes / No
- Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	375998	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	375997	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	375996	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	375995	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
05	375994	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
06	375993	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
07	375992	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
08	375991	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
09	375990	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
10	375989	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
11	375988	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
12	375987	Yes	NA	Yes	4 oz. Jar - Unpres	NP	

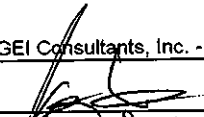


2nd Review

- Were all containers scanned into storage/lab?
- Are barcode labels on correct containers?
- Are all Flashpoint stickers attached/container ID # circled?
- Are all Hex Chrome stickers attached?
- Are all QC stickers attached?
- Are VOA stickers attached if bubbles noted?

Initials [Signature]
 Yes / No
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA

Completed

ESS Laboratory Sample and Cooler Receipt Checklist

Client:	GEI Consultants, Inc. - TB/MM	ESS Project ID:	19H0316
		Date Received:	8/9/2019
By:		Date & Time:	8/9/19 18:37
Reviewed By:		Date & Time:	8/9/19 1853
Delivered By:		Date & Time:	8/9/19 1853

Chain-of-Custody Record

Laboratory: **ESS**

Laboratory Job # **1910316**
(Lab use only)



Project Information

Project Name: **Tombarello Site Investigation**

Project Number: **1802441**

Project Location: **Lawrence, MA**

Project Manager: **L. Lombardo**

Send Report to: lombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaedas@geiconsultants.com, blee@geiconsultants.com

Send EDD to: EastRegionData@geiconsultants.com

Page 1 of 3

MCP PRESUMPTIVE CERTAINTY REQUIRED - YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Preservative

None	None	None	None				
PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)	PCBs (aqueous)				

Sample Handling

Samples Field Filtered YES NO NA

Sampled Shipped With Ice YES NO

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)	PCBs (aqueous)					Sample Specific Remarks
		Date	Time												
-	1802441-EB-08	8/8/2019	0740	Aqueous	1	CWS				x					Equipment Blank
1	1802441-FD-17	8/8/2019	1201	Concrete	1	CWS	x								Field Duplicate
2	1802441-ECP-2A	8/8/2019	0750	Concrete	1	BRL	x								
3	1802441-ECP-2B	8/8/2019	0755	Concrete	1	CWS		x	x						
4	1802441-LGSP-1A	8/8/2019	0830	Concrete	1	CWS	x								
5	1802441-LGSP-1B	8/8/2019	0835	Concrete	1	CWS		x	x						
6	1802441-LGSP-2A	8/8/2019	0845	Concrete	1	CWS	x								
7	1802441-LGSP-2B	8/8/2019	0850	Concrete	1	CWS		x	x						
8	1802441-LGSP-3A	8/8/2019	0900	Concrete	1	CWS	x								
9	1802441-LGSP-3B	8/8/2019	0905	Concrete	1	CWS		x	x						
10	1802441-LGSP-4A	8/8/2019	0915	Concrete	1	CWS	x								
11	1802441-LGSP-4B	8/8/2019	0920	Concrete	1	CWS		x	x						
12	1802441-LGSP-5A	8/8/2019	0925	Concrete	1	CWS	x								

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by: (signature)	Date:	Time:	Received by: (signature)
1. [Signature]	8/8/2019	1530	1. GEI Refrigerator
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
2. [Signature]	8/9/19	1100	2. [Signature]
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
3. [Signature]	8/9/19	1100	3. [Signature]
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
4. [Signature]	8/9/19	17:47	4. [Signature] 8/9/19 18:36

Turnaround Time (Business days):

Normal Other

10-Day 7-Day

5-Day 3-Day

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

Manual Soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

ICE temp: 2.2



CERTIFICATE OF ANALYSIS

Leslie Lombardo
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 19H0317

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 2:28 pm, Aug 27, 2019

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

SAMPLE RECEIPT

The following samples were received on August 09, 2019 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 August 27, 2019: This report has been revised to remove Zn from metals list per client's request.

Lab Number	Sample Name	Matrix	Analysis
19H0317-01	1802441-LGSP-5B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-02	1802441-LGSP-6A	Soil	8082A
19H0317-03	1802441-LGSP-6B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-04	1802441-SSP-1A	Soil	8082A
19H0317-05	1802441-SSP-1B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-06	1802441-SSP-2A	Soil	8082A
19H0317-07	1802441-SSP-2B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-08	1802441-SSP-3A	Soil	8082A
19H0317-09	1802441-SSP-3B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-10	1802441-SSP-4A	Soil	8082A
19H0317-11	1802441-SSP-4B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-12	1802441-SSP-5A	Soil	8082A
19H0317-13	1802441-WCP-1A	Soil	8082A
19H0317-14	1802441-WCP-1B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-15	1802441-BPAP-1A	Soil	8082A
19H0317-16	1802441-BPAP-1B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-17	1802441-BPAP-2A	Soil	8082A
19H0317-18	1802441-BPAP-2B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH
19H0317-19	1802441-BPAP-3A	Soil	8082A
19H0317-20	1802441-BPAP-3B	Soil	6010C, 6020A, 7471B, EPH8270, MADEP-EPH



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
 Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

- C9H0292-CCV2 [Continuing Calibration %Diff/Drift is above control limit \(CD+\).](#)
 Benzo(g,h,i)perylene (31% @ 20%), Indeno(1,2,3-cd)Pyrene (30% @ 20%)
- C9H0292-CCV2 [Continuing Calibration %Diff/Drift is below control limit \(CD-\).](#)
 2-Methylnaphthalene (23% @ 20%), Naphthalene (32% @ 20%)

Total Metals

- 19H0317-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-03 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-05 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-07 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-09 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-11 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-14 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-16 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-18 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium
- 19H0317-20 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Selenium

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **19H0317-01 through 19H0317-20**

Matrices: () Ground Water/Surface Water Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|--|---|--|---|--|---|
| <input type="checkbox"/> 8260 VOC
CAM II A | <input checked="" type="checkbox"/> 7470/7471 Hg
CAM III B | <input type="checkbox"/> MassDEP VPH
(GC/PID/FID)
CAM IV A | <input checked="" type="checkbox"/> 8082 PCB
CAM V A | <input type="checkbox"/> 9014 Total
Cyanide/PAC
CAM VI A | <input type="checkbox"/> 6860 Perchlorate
CAM VIII B |
| <input checked="" type="checkbox"/> 8270 SVOC
CAM II B | <input type="checkbox"/> 7010 Metals
CAM III C | <input type="checkbox"/> MassDEP VPH
(GC/MS)
CAM IV C | <input type="checkbox"/> 8081 Pesticides
CAM V B | <input type="checkbox"/> 7196 Hex Cr
CAM VI B | <input type="checkbox"/> MassDEP APH
CAM IX A |
| <input checked="" type="checkbox"/> 6010 Metals
CAM III A | <input checked="" type="checkbox"/> 6020 Metals
CAM III D | <input checked="" type="checkbox"/> MassDEP EPH
CAM IV B | <input type="checkbox"/> 8151 Herbicides
CAM V C | <input type="checkbox"/> Explosives
CAM VIII A | <input type="checkbox"/> 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 the 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. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes No ()
b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? 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 protocols(s)? Yes () No *
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 *
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes () No *

**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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 21, 2019
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-5B
Date Sampled: 08/08/19 09:30
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	5.47 (2.21)		6010C		1	KJK	08/16/19 22:26	2.31	100	CH91353
Barium	56.6 (2.21)		6010C		1	KJK	08/16/19 22:26	2.31	100	CH91353
Cadmium	ND (0.44)		6020A		1	NAR	08/19/19 23:33	2.31	100	CH91353
Chromium	12.4 (0.89)		6010C		1	KJK	08/16/19 22:26	2.31	100	CH91353
Lead	7.44 (0.44)		6020A		1	NAR	08/19/19 23:33	2.31	100	CH91353
Mercury	ND (0.028)		7471B		1	MKS	08/15/19 11:08	0.72	40	CH91354
Selenium	EL ND (4.43)		6020A		1	NAR	08/20/19 17:32	2.31	100	CH91353
Silver	ND (0.44)		6020A		1	NAR	08/19/19 23:33	2.31	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-5B
Date Sampled: 08/08/19 09:30
Percent Solids: 98
Initial Volume: 25.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (14.9)		MADEP-EPH		1	CAD	08/14/19 2:35	C9H0241	CH91208
C19-C36 Aliphatics1	454 (14.9)		MADEP-EPH		1	CAD	08/14/19 2:35	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	39.6 (14.9)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
C11-C22 Aromatics1,2	39.6 (14.9)		EPH8270			VSC	08/17/19 6:16		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Acenaphthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Naphthalene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Phenanthrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Anthracene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Benzo(a)anthracene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Benzo(a)pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Chrysene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Fluorene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208
Pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:16	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	86 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	100 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	99 %		40-140
<i>Surrogate: O-Terphenyl</i>	74 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
 Client Project ID: Tombarello Site Investigation
 Client Sample ID: 1802441-LGSP-6A
 Date Sampled: 08/08/19 09:40
 Percent Solids: 98
 Initial Volume: 5.18
 Final Volume: 10
 Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
 ESS Laboratory Sample ID: 19H0317-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MJV
 Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1254 [2C]	0.1 (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1260 [2C]	0.2 (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 23:30		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 23:30		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	41 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	50 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	40 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	50 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-6B
Date Sampled: 08/08/19 09:45
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	11.9 (6.61)		6010C		3	KJK	08/19/19 15:33	2.32	100	CH91353
Barium	79.7 (6.61)		6010C		3	KJK	08/19/19 15:33	2.32	100	CH91353
Cadmium	ND (0.44)		6020A		1	NAR	08/19/19 23:38	2.32	100	CH91353
Chromium	27.2 (2.65)		6010C		3	KJK	08/19/19 15:33	2.32	100	CH91353
Lead	7.15 (0.44)		6020A		1	NAR	08/19/19 23:38	2.32	100	CH91353
Mercury	ND (0.033)		7471B		1	MKS	08/15/19 11:10	0.61	40	CH91354
Selenium	EL ND (4.41)		6020A		1	NAR	08/20/19 17:37	2.32	100	CH91353
Silver	ND (0.44)		6020A		1	NAR	08/19/19 23:38	2.32	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-LGSP-6B
Date Sampled: 08/08/19 09:45
Percent Solids: 98
Initial Volume: 25.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.1)		MADEP-EPH		1	CAD	08/14/19 3:23	C9H0241	CH91208
C19-C36 Aliphatics1	356 (15.1)		MADEP-EPH		1	CAD	08/14/19 3:23	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	33.9 (15.1)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
C11-C22 Aromatics1,2	33.9 (15.1)		EPH8270			VSC	08/17/19 6:52		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Acenaphthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Naphthalene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Phenanthrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Anthracene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Benzo(a)anthracene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Benzo(a)pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Chrysene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Fluoranthene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Fluorene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208
Pyrene	ND (0.40)		EPH8270		1	VSC	08/17/19 6:52	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	79 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	96 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	94 %		40-140
<i>Surrogate: O-Terphenyl</i>	73 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-1A
Date Sampled: 08/08/19 11:15
Percent Solids: 97
Initial Volume: 5.29
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1260	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/14/19 23:49		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/14/19 23:49		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	38 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	40 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	27 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	33 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-1B
Date Sampled: 08/08/19 11:20
Percent Solids: 97

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	2.80 (2.26)		6010C		1	KJK	08/16/19 22:38	2.29	100	CH91353
Barium	26.3 (2.26)		6010C		1	KJK	08/16/19 22:38	2.29	100	CH91353
Cadmium	ND (0.45)		6020A		1	NAR	08/19/19 23:43	2.29	100	CH91353
Chromium	17.5 (0.90)		6010C		1	KJK	08/16/19 22:38	2.29	100	CH91353
Lead	3.84 (0.45)		6020A		1	NAR	08/19/19 23:43	2.29	100	CH91353
Mercury	ND (0.027)		7471B		1	MKS	08/15/19 11:12	0.76	40	CH91354
Selenium	EL ND (4.52)		6020A		1	NAR	08/20/19 17:42	2.29	100	CH91353
Silver	ND (0.45)		6020A		1	NAR	08/19/19 23:43	2.29	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-1B
Date Sampled: 08/08/19 11:20
Percent Solids: 97
Initial Volume: 25.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.2)		MADEP-EPH		1	CAD	08/14/19 4:10	C9H0241	CH91208
C19-C36 Aliphatics1	28.2 (15.2)		MADEP-EPH		1	CAD	08/14/19 4:10	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.2)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
C11-C22 Aromatics1,2	ND (15.2)		EPH8270			VSC	08/17/19 7:29		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Acenaphthene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Naphthalene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Phenanthrene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Anthracene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Benzo(a)anthracene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Benzo(a)pyrene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Benzo(b)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Benzo(g,h,i)perylene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Benzo(k)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Chrysene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Fluoranthene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Fluorene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208
Pyrene	ND (0.41)		EPH8270		1	VSC	08/17/19 7:29	C9H0358	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	76 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	100 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	97 %		40-140
<i>Surrogate: O-Terphenyl</i>	73 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-2A
Date Sampled: 08/08/19 11:25
Percent Solids: 98
Initial Volume: 5.09
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1260 [2C]	0.2 (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/15/19 0:08		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/15/19 0:08		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	38 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	44 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	38 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	42 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-2B
Date Sampled: 08/08/19 11:30
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	8.10 (6.69)		6010C		3	KJK	08/19/19 15:46	2.29	100	CH91353
Barium	72.7 (6.69)		6010C		3	KJK	08/19/19 15:46	2.29	100	CH91353
Cadmium	ND (0.45)		6020A		1	NAR	08/19/19 23:48	2.29	100	CH91353
Chromium	26.7 (2.68)		6010C		3	KJK	08/19/19 15:46	2.29	100	CH91353
Lead	4.80 (0.45)		6020A		1	NAR	08/19/19 23:48	2.29	100	CH91353
Mercury	ND (0.027)		7471B		1	MKS	08/15/19 11:14	0.74	40	CH91354
Selenium	EL ND (4.46)		6020A		1	NAR	08/20/19 17:47	2.29	100	CH91353
Silver	ND (0.45)		6020A		1	NAR	08/19/19 23:48	2.29	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-2B
Date Sampled: 08/08/19 11:30
Percent Solids: 98
Initial Volume: 25.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-07
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.2)		MADEP-EPH		1	CAD	08/14/19 4:57	C9H0241	CH91208
C19-C36 Aliphatics1	134 (15.2)		MADEP-EPH		1	CAD	08/14/19 4:57	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.2)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
C11-C22 Aromatics1,2	ND (15.2)		EPH8270			VSC	08/18/19 14:15		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Acenaphthene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Naphthalene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Phenanthrene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Benzo(a)anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Benzo(a)pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Chrysene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Fluorene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208
Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 14:15	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	79 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	94 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	96 %		40-140
<i>Surrogate: O-Terphenyl</i>	72 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-3A
Date Sampled: 08/08/19 11:40
Percent Solids: 98
Initial Volume: 5.38
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1221	ND (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1232	ND (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1242 [2C]	0.3 (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1248	ND (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1254 [2C]	0.2 (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1260 [2C]	0.1 (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1262	ND (0.09)		8082A		1	08/15/19 0:28		CH91305
Aroclor 1268	ND (0.09)		8082A		1	08/15/19 0:28		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	39 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	46 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	40 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	44 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-3B
Date Sampled: 08/08/19 11:45
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	8.21 (6.66)		6010C		3	KJK	08/19/19 16:06	2.3	100	CH91353
Barium	56.4 (6.66)		6010C		3	KJK	08/19/19 16:06	2.3	100	CH91353
Cadmium	ND (0.44)		6020A		1	NAR	08/19/19 23:53	2.3	100	CH91353
Chromium	40.8 (2.66)		6010C		3	KJK	08/19/19 16:06	2.3	100	CH91353
Lead	6.66 (0.44)		6020A		1	NAR	08/19/19 23:53	2.3	100	CH91353
Mercury	ND (0.024)		7471B		1	MKS	08/15/19 11:16	0.85	40	CH91354
Selenium	EL ND (4.44)		6020A		1	NAR	08/20/19 17:52	2.3	100	CH91353
Silver	ND (0.44)		6020A		1	NAR	08/19/19 23:53	2.3	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-3B
Date Sampled: 08/08/19 11:45
Percent Solids: 98
Initial Volume: 25.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-09
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	26.2 (14.8)		MADEP-EPH		1	CAD	08/14/19 5:44	C9H0241	CH91208
C19-C36 Aliphatics1	534 (14.8)		MADEP-EPH		1	CAD	08/14/19 5:44	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	40.9 (14.8)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
C11-C22 Aromatics1,2	40.9 (14.8)		EPH8270			VSC	08/18/19 14:52		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Acenaphthene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Naphthalene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Phenanthrene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Anthracene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Benzo(a)anthracene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Benzo(a)pyrene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Chrysene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Fluoranthene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Fluorene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208
Pyrene	ND (0.39)		EPH8270		1	VSC	08/18/19 14:52	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	88 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	90 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	84 %		40-140
<i>Surrogate: O-Terphenyl</i>	78 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-4A
Date Sampled: 08/08/19 12:15
Percent Solids: 97
Initial Volume: 5.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1242	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1260	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/15/19 0:47		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/15/19 0:47		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	53 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	48 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	32 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	39 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-4B
Date Sampled: 08/08/19 12:20
Percent Solids: 97

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.56)		6010C		1	KJK	08/16/19 23:03	2.02	100	CH91353
Barium	25.6 (2.56)		6010C		1	KJK	08/16/19 23:03	2.02	100	CH91353
Cadmium	ND (0.51)		6020A		1	NAR	08/19/19 23:58	2.02	100	CH91353
Chromium	8.07 (1.02)		6010C		1	KJK	08/16/19 23:03	2.02	100	CH91353
Lead	3.82 (0.51)		6020A		1	NAR	08/19/19 23:58	2.02	100	CH91353
Mercury	ND (0.020)		7471B		1	MKS	08/15/19 11:18	1	40	CH91354
Selenium	EL ND (5.12)		6020A		1	NAR	08/20/19 17:57	2.02	100	CH91353
Silver	ND (0.51)		6020A		1	NAR	08/19/19 23:58	2.02	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-4B
Date Sampled: 08/08/19 12:20
Percent Solids: 97
Initial Volume: 25.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-11
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.4)		MADEP-EPH		1	CAD	08/14/19 6:31	C9H0241	CH91208
C19-C36 Aliphatics1	ND (15.4)		MADEP-EPH		1	CAD	08/14/19 6:31	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.4)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
C11-C22 Aromatics1,2	ND (15.4)		EPH8270			VSC	08/18/19 15:28		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Acenaphthene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Naphthalene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Phenanthrene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Benzo(a)anthracene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Benzo(a)pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Chrysene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Fluoranthene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Fluorene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208
Pyrene	ND (0.41)		EPH8270		1	VSC	08/18/19 15:28	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	77 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	93 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	91 %		40-140
<i>Surrogate: O-Terphenyl</i>	78 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-SSP-5A
Date Sampled: 08/08/19 12:00
Percent Solids: 98
Initial Volume: 20.5
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1221	ND (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1232	ND (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1242	0.07 (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1248	ND (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1254 [2C]	0.2 (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1260	0.1 (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1262	ND (0.05)		8082A		1	08/16/19 12:43		CH91551
Aroclor 1268	ND (0.05)		8082A		1	08/16/19 12:43		CH91551

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	41 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	46 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	50 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	51 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-WCP-1A
Date Sampled: 08/08/19 13:20
Percent Solids: 98
Initial Volume: 5.24
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/15/19 21:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1221	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1232	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1242	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1248	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1254 [2C]	0.1 (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1260	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1262	ND (0.1)		8082A		1	08/16/19 19:25		CH91506
Aroclor 1268	ND (0.1)		8082A		1	08/16/19 19:25		CH91506

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	47 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	51 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	44 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	49 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-WCP-1B
Date Sampled: 08/08/19 13:25
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-14
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (12.2)		6010C		5	KJK	08/19/19 16:15	2.1	100	CH91353
Barium	65.3 (12.2)		6010C		5	KJK	08/19/19 16:15	2.1	100	CH91353
Cadmium	ND (0.49)		6020A		1	NAR	08/20/19 0:02	2.1	100	CH91353
Chromium	31.2 (4.87)		6010C		5	KJK	08/19/19 16:15	2.1	100	CH91353
Lead	4.65 (0.49)		6020A		1	NAR	08/20/19 0:02	2.1	100	CH91353
Mercury	ND (0.024)		7471B		1	MKS	08/15/19 11:20	0.86	40	CH91354
Selenium	EL ND (4.87)		6020A		1	NAR	08/20/19 18:01	2.1	100	CH91353
Silver	ND (0.49)		6020A		1	NAR	08/20/19 0:02	2.1	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-WCP-1B
Date Sampled: 08/08/19 13:25
Percent Solids: 98
Initial Volume: 24.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-14
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.7)		MADEP-EPH		1	CAD	08/14/19 7:18	C9H0241	CH91208
C19-C36 Aliphatics1	21.5 (15.7)		MADEP-EPH		1	CAD	08/14/19 7:18	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.7)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
C11-C22 Aromatics1,2	ND (15.7)		EPH8270			VSC	08/18/19 16:05		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 16:05	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	79 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	101 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	98 %		40-140
<i>Surrogate: O-Terphenyl</i>	85 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-1A
Date Sampled: 08/08/19 13:40
Percent Solids: 98
Initial Volume: 5.04
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/13/19 15:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1221	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1232	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1242 [2C]	0.3 (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1248	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1254	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1260 [2C]	0.2 (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1262	ND (0.1)		8082A		1	08/15/19 4:18		CH91305
Aroclor 1268	ND (0.1)		8082A		1	08/15/19 4:18		CH91305

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	40 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	43 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	35 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	41 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-1B
Date Sampled: 08/08/19 13:45
Percent Solids: 97

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-16
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.33)		6010C		1	KJK	08/16/19 23:24	2.22	100	CH91353
Barium	22.7 (2.33)		6010C		1	KJK	08/16/19 23:24	2.22	100	CH91353
Cadmium	ND (0.47)		6020A		1	NAR	08/20/19 0:17	2.22	100	CH91353
Chromium	11.8 (0.93)		6010C		1	KJK	08/16/19 23:24	2.22	100	CH91353
Lead	4.43 (0.47)		6020A		1	NAR	08/20/19 0:17	2.22	100	CH91353
Mercury	ND (0.027)		7471B		1	MKS	08/15/19 11:26	0.76	40	CH91354
Selenium	EL ND (4.66)		6020A		1	NAR	08/20/19 18:16	2.22	100	CH91353
Silver	ND (0.47)		6020A		1	NAR	08/20/19 0:17	2.22	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-1B
Date Sampled: 08/08/19 13:45
Percent Solids: 97
Initial Volume: 25.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-16
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.0)		MADEP-EPH		1	CAD	08/14/19 8:05	C9H0241	CH91208
C19-C36 Aliphatics1	47.3 (15.0)		MADEP-EPH		1	CAD	08/14/19 8:05	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	ND (15.0)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
C11-C22 Aromatics1,2	ND (15.0)		EPH8270			VSC	08/18/19 16:41		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Acenaphthene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Naphthalene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Phenanthrene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Acenaphthylene	ND (0.20)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Anthracene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Benzo(a)anthracene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Benzo(a)pyrene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Chrysene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Fluoranthene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Fluorene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208
Pyrene	ND (0.40)		EPH8270		1	VSC	08/18/19 16:41	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	74 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	102 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	105 %		40-140
<i>Surrogate: O-Terphenyl</i>	78 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-2A
Date Sampled: 08/08/19 13:55
Percent Solids: 98
Initial Volume: 5.36
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-17
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/15/19 21:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1221	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1232	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1242 [2C]	0.3 (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1248	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1254 [2C]	0.2 (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1260 [2C]	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1262	ND (0.1)		8082A		1	08/16/19 19:44		CH91506
Aroclor 1268	ND (0.1)		8082A		1	08/16/19 19:44		CH91506

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	31 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	35 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	33 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	33 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-2B
Date Sampled: 08/08/19 14:00
Percent Solids: 97

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-18
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.42)		6010C		1	KJK	08/16/19 23:30	2.13	100	CH91353
Barium	20.8 (2.42)		6010C		1	KJK	08/16/19 23:30	2.13	100	CH91353
Cadmium	ND (0.48)		6020A		1	NAR	08/20/19 0:22	2.13	100	CH91353
Chromium	9.98 (0.97)		6010C		1	KJK	08/16/19 23:30	2.13	100	CH91353
Lead	4.29 (0.48)		6020A		1	NAR	08/20/19 0:22	2.13	100	CH91353
Mercury	ND (0.023)		7471B		1	MKS	08/15/19 11:28	0.9	40	CH91354
Selenium	EL ND (4.85)		6020A		1	NAR	08/20/19 18:21	2.13	100	CH91353
Silver	ND (0.48)		6020A		1	NAR	08/20/19 0:22	2.13	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-2B
Date Sampled: 08/08/19 14:00
Percent Solids: 97
Initial Volume: 24.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-18
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (15.7)		MADEP-EPH		1	CAD	08/14/19 8:52	C9H0241	CH91208
C19-C36 Aliphatics1	736 (15.7)		MADEP-EPH		1	CAD	08/14/19 8:52	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	52.6 (15.7)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
C11-C22 Aromatics1,2	52.6 (15.7)		EPH8270			VSC	08/18/19 17:18		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:18	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	93 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	98 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	98 %		40-140
<i>Surrogate: O-Terphenyl</i>	80 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-3A
Date Sampled: 08/08/19 14:10
Percent Solids: 98
Initial Volume: 5.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-19
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 8/15/19 21:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1221	ND (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1232	ND (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1242	1.5 (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1248	ND (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1254	0.7 (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1260	0.2 (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1262	ND (0.1)		8082A		1	08/16/19 20:03		CH91506
Aroclor 1268	ND (0.1)		8082A		1	08/16/19 20:03		CH91506

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	56 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	61 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	63 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	61 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-3B
Date Sampled: 08/08/19 14:15
Percent Solids: 98

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-20
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.35)		6010C		1	KJK	08/16/19 23:35	2.18	100	CH91353
Barium	23.2 (2.35)		6010C		1	KJK	08/16/19 23:35	2.18	100	CH91353
Cadmium	ND (0.47)		6020A		1	NAR	08/20/19 0:27	2.18	100	CH91353
Chromium	12.0 (0.94)		6010C		1	KJK	08/16/19 23:35	2.18	100	CH91353
Lead	3.72 (0.47)		6020A		1	NAR	08/20/19 0:27	2.18	100	CH91353
Mercury	ND (0.027)		7471B		1	MKS	08/15/19 11:30	0.75	40	CH91354
Selenium	EL ND (4.70)		6020A		1	NAR	08/20/19 18:26	2.18	100	CH91353
Silver	ND (0.47)		6020A		1	NAR	08/20/19 0:27	2.18	100	CH91353



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-BPAP-3B
Date Sampled: 08/08/19 14:15
Percent Solids: 98
Initial Volume: 24.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19H0317
ESS Laboratory Sample ID: 19H0317-20
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/12/19 14:30

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	22.6 (15.6)		MADEP-EPH		1	CAD	08/14/19 9:39	C9H0241	CH91208
C19-C36 Aliphatics1	601 (15.6)		MADEP-EPH		1	CAD	08/14/19 9:39	C9H0241	CH91208
C11-C22 Unadjusted Aromatics1	58.7 (15.6)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
C11-C22 Aromatics1,2	58.7 (15.6)		EPH8270			VSC	08/18/19 17:55		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Acenaphthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Naphthalene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Phenanthrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Acenaphthylene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Benzo(a)anthracene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Benzo(a)pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Chrysene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Fluoranthene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Fluorene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208
Pyrene	ND (0.42)		EPH8270		1	VSC	08/18/19 17:55	C9H0369	CH91208

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	90 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	108 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	103 %		40-140
<i>Surrogate: O-Terphenyl</i>	83 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CH91353 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet
Barium	ND	2.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.00	mg/kg wet
Lead	ND	0.50	mg/kg wet
Selenium	ND	5.00	mg/kg wet
Silver	ND	0.50	mg/kg wet

LCS

Arsenic	126	8.33	mg/kg wet	128.0	99	80-120
Barium	570	8.33	mg/kg wet	536.0	106	80-120
Cadmium	82.7	8.33	mg/kg wet	99.00	84	80-120
Chromium	118	3.33	mg/kg wet	116.0	102	80-120
Lead	257	8.33	mg/kg wet	277.0	93	80-120
Selenium	234	83.3	mg/kg wet	242.0	97	80-120
Silver	59.8	8.33	mg/kg wet	64.30	93	80-120

LCS Dup

Arsenic	134	8.20	mg/kg wet	128.0	105	80-120	6	20
Barium	545	8.20	mg/kg wet	536.0	102	80-120	4	20
Cadmium	86.7	8.20	mg/kg wet	99.00	88	80-120	5	30
Chromium	122	3.28	mg/kg wet	116.0	105	80-120	3	20
Lead	269	8.20	mg/kg wet	277.0	97	80-120	4	30
Selenium	236	82.0	mg/kg wet	242.0	98	80-120	1	30
Silver	63.3	8.20	mg/kg wet	64.30	98	80-120	6	30

Batch CH91354 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet
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LCS

Mercury	23.6	3.47	mg/kg wet	27.30	86	80-120
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LCS Dup

Mercury	23.9	3.88	mg/kg wet	27.30	87	80-120	1	20
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91305 - 3540C

Blank

Aroclor 1016	ND	0.02	mg/kg wet
Aroclor 1016 [2C]	ND	0.02	mg/kg wet
Aroclor 1221	ND	0.02	mg/kg wet
Aroclor 1221 [2C]	ND	0.02	mg/kg wet
Aroclor 1232	ND	0.02	mg/kg wet
Aroclor 1232 [2C]	ND	0.02	mg/kg wet
Aroclor 1242	ND	0.02	mg/kg wet
Aroclor 1242 [2C]	ND	0.02	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91305 - 3540C

Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0203		mg/kg wet	0.02500		81	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0216		mg/kg wet	0.02500		86	30-150			
Surrogate: Tetrachloro-m-xylene	0.0167		mg/kg wet	0.02500		67	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0217		mg/kg wet	0.02500		87	30-150			

LCS

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		105	40-140			
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		101	40-140			
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		95	40-140			

Surrogate: Decachlorobiphenyl	0.0230		mg/kg wet	0.02500		92	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0242		mg/kg wet	0.02500		97	30-150			
Surrogate: Tetrachloro-m-xylene	0.0205		mg/kg wet	0.02500		82	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0243		mg/kg wet	0.02500		97	30-150			

LCS Dup

Aroclor 1016	0.4	0.02	mg/kg wet	0.5000		86	40-140	5	30	
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		97	40-140	9	30	
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		97	40-140	3	30	
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		91	40-140	4	30	

Surrogate: Decachlorobiphenyl	0.0219		mg/kg wet	0.02500		88	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0232		mg/kg wet	0.02500		93	30-150			
Surrogate: Tetrachloro-m-xylene	0.0189		mg/kg wet	0.02500		75	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0212		mg/kg wet	0.02500		85	30-150			

Batch CH91506 - 3540C

Blank

Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91506 - 3540C

Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0228		mg/kg wet	0.02500		91	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0228		mg/kg wet	0.02500		91	30-150			
Surrogate: Tetrachloro-m-xylene	0.0179		mg/kg wet	0.02500		72	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0186		mg/kg wet	0.02500		75	30-150			

LCS

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		91	40-140			
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		90	40-140			
Aroclor 1260 [2C]	0.4	0.02	mg/kg wet	0.5000		88	40-140			

Surrogate: Decachlorobiphenyl	0.0231		mg/kg wet	0.02500		92	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0228		mg/kg wet	0.02500		91	30-150			
Surrogate: Tetrachloro-m-xylene	0.0181		mg/kg wet	0.02500		72	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0182		mg/kg wet	0.02500		73	30-150			

LCS Dup

Aroclor 1016	0.5	0.02	mg/kg wet	0.5000		94	40-140	4	30	
Aroclor 1016 [2C]	0.5	0.02	mg/kg wet	0.5000		93	40-140	3	30	
Aroclor 1260	0.5	0.02	mg/kg wet	0.5000		92	40-140	2	30	
Aroclor 1260 [2C]	0.5	0.02	mg/kg wet	0.5000		90	40-140	3	30	

Surrogate: Decachlorobiphenyl	0.0237		mg/kg wet	0.02500		95	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0235		mg/kg wet	0.02500		94	30-150			
Surrogate: Tetrachloro-m-xylene	0.0191		mg/kg wet	0.02500		77	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0195		mg/kg wet	0.02500		78	30-150			

Batch CH91551 - 3540C

Blank

Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CH91551 - 3540C

Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0181		mg/kg wet	0.02500		72	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0176		mg/kg wet	0.02500		70	30-150			
Surrogate: Tetrachloro-m-xylene	0.0194		mg/kg wet	0.02500		78	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0202		mg/kg wet	0.02500		81	30-150			

LCS

Aroclor 1016	0.5	0.05	mg/kg wet	0.5000		95	40-140			
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		96	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		78	40-140			

Surrogate: Decachlorobiphenyl	0.0213		mg/kg wet	0.02500		85	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0202		mg/kg wet	0.02500		81	30-150			
Surrogate: Tetrachloro-m-xylene	0.0196		mg/kg wet	0.02500		79	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0201		mg/kg wet	0.02500		80	30-150			

LCS Dup

Aroclor 1016	0.5	0.05	mg/kg wet	0.5000		93	40-140	3	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		95	40-140	1	30	
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		92	40-140	3	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		84	40-140	8	30	

Surrogate: Decachlorobiphenyl	0.0221		mg/kg wet	0.02500		89	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0213		mg/kg wet	0.02500		85	30-150			
Surrogate: Tetrachloro-m-xylene	0.0190		mg/kg wet	0.02500		76	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0195		mg/kg wet	0.02500		78	30-150			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH91208 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
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ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH91208 - 3546

Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	1.72		mg/kg wet	2.020		85	40-140			
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Blank

2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
<i>Surrogate: 2-Bromonaphthalene</i>	50.6		mg/L	50.00		101	40-140			
<i>Surrogate: 2-Fluorobiphenyl</i>	49.3		mg/L	50.00		99	40-140			
<i>Surrogate: O-Terphenyl</i>	1.93		mg/kg wet	2.008		96	40-140			

LCS

C19-C36 Aliphatics1	15.3	15.0	mg/kg wet	16.00		96	40-140			
C9-C18 Aliphatics1	9.4	15.0	mg/kg wet	12.00		78	40-140			
Decane (C10)	1.1	0.5	mg/kg wet	2.000		57	40-140			
Docosane (C22)	1.8	0.5	mg/kg wet	2.000		88	40-140			
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		61	40-140			
Eicosane (C20)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Hexacosane (C26)	1.7	0.5	mg/kg wet	2.000		87	40-140			
Hexadecane (C16)	1.5	0.5	mg/kg wet	2.000		77	40-140			
Hexatriacontane (C36)	1.6	0.5	mg/kg wet	2.000		79	40-140			
Nonadecane (C19)	1.7	0.5	mg/kg wet	2.000		85	40-140			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CH91208 - 3546										
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		47	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		88	40-140			
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		83	40-140			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.69</i>		mg/kg wet	<i>2.020</i>		<i>84</i>	<i>40-140</i>			
LCS										
2-Methylnaphthalene	1.49	0.20	mg/kg wet	2.000		74	40-140			
Acenaphthene	1.50	0.40	mg/kg wet	2.000		75	40-140			
Acenaphthylene	1.48	0.20	mg/kg wet	2.000		74	40-140			
Anthracene	1.66	0.40	mg/kg wet	2.000		83	40-140			
Benzo(a)anthracene	2.18	0.40	mg/kg wet	2.000		109	40-140			
Benzo(a)pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140			
Benzo(b)fluoranthene	2.10	0.40	mg/kg wet	2.000		105	40-140			
Benzo(g,h,i)perylene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Benzo(k)fluoranthene	2.07	0.40	mg/kg wet	2.000		104	40-140			
C11-C22 Unadjusted Aromatics1	31.3	15.0	mg/kg wet	34.00		92	40-140			
Chrysene	2.08	0.40	mg/kg wet	2.000		104	40-140			
Dibenzo(a,h)Anthracene	1.95	0.20	mg/kg wet	2.000		98	40-140			
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Fluorene	1.64	0.40	mg/kg wet	2.000		82	40-140			
Indeno(1,2,3-cd)Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Naphthalene	1.18	0.40	mg/kg wet	2.000		59	40-140			
Phenanthrene	1.78	0.40	mg/kg wet	2.000		89	40-140			
Pyrene	1.86	0.40	mg/kg wet	2.000		93	40-140			
<i>Surrogate: 2-Bromonaphthalene</i>	<i>50.1</i>		mg/L	<i>50.00</i>		<i>100</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>48.0</i>		mg/L	<i>50.00</i>		<i>96</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>1.95</i>		mg/kg wet	<i>2.008</i>		<i>97</i>	<i>40-140</i>			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	14.3	15.0	mg/kg wet	16.00		89	40-140	7	25	
C9-C18 Aliphatics1	8.9	15.0	mg/kg wet	12.00		74	40-140	5	25	
Decane (C10)	1.1	0.5	mg/kg wet	2.000		54	40-140	6	25	
Docosane (C22)	1.6	0.5	mg/kg wet	2.000		82	40-140	6	25	
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		58	40-140	5	25	
Eicosane (C20)	1.6	0.5	mg/kg wet	2.000		80	40-140	7	25	
Hexacosane (C26)	1.6	0.5	mg/kg wet	2.000		81	40-140	6	25	
Hexadecane (C16)	1.4	0.5	mg/kg wet	2.000		72	40-140	7	25	
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		74	40-140	7	25	
Nonadecane (C19)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		45	30-140	4	25	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 19H0317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CH91208 - 3546										
Octacosane (C28)	1.6	0.5	mg/kg wet	2.000		80	40-140	7	25	
Octadecane (C18)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Tetracosane (C24)	1.6	0.5	mg/kg wet	2.000		82	40-140	6	25	
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		65	40-140	4	25	
Triacontane (C30)	1.6	0.5	mg/kg wet	2.000		78	40-140	7	25	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.59</i>		mg/kg wet	<i>2.020</i>		<i>79</i>	<i>40-140</i>			
LCS Dup										
2-Methylnaphthalene	1.32	0.20	mg/kg wet	2.000		66	40-140	12	30	
Acenaphthene	1.36	0.40	mg/kg wet	2.000		68	40-140	10	30	
Acenaphthylene	1.32	0.20	mg/kg wet	2.000		66	40-140	11	30	
Anthracene	1.53	0.40	mg/kg wet	2.000		76	40-140	8	30	
Benzo(a)anthracene	1.93	0.40	mg/kg wet	2.000		97	40-140	12	30	
Benzo(a)pyrene	1.62	0.40	mg/kg wet	2.000		81	40-140	12	30	
Benzo(b)fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140	14	30	
Benzo(g,h,i)perylene	1.61	0.40	mg/kg wet	2.000		81	40-140	13	30	
Benzo(k)fluoranthene	1.77	0.40	mg/kg wet	2.000		89	40-140	15	30	
C11-C22 Unadjusted Aromatics1	27.5	15.0	mg/kg wet	34.00		81	40-140	13	25	
Chrysene	1.83	0.40	mg/kg wet	2.000		91	40-140	13	30	
Dibenzo(a,h)Anthracene	1.64	0.20	mg/kg wet	2.000		82	40-140	18	30	
Fluoranthene	1.71	0.40	mg/kg wet	2.000		85	40-140	7	30	
Fluorene	1.48	0.40	mg/kg wet	2.000		74	40-140	10	30	
Indeno(1,2,3-cd)Pyrene	1.70	0.40	mg/kg wet	2.000		85	40-140	13	30	
Naphthalene	1.15	0.40	mg/kg wet	2.000		57	40-140	3	30	
Phenanthrene	1.53	0.40	mg/kg wet	2.000		77	40-140	15	30	
Pyrene	1.67	0.40	mg/kg wet	2.000		83	40-140	11	30	
<i>Surrogate: 2-Bromonaphthalene</i>	<i>46.6</i>		mg/L	<i>50.00</i>		<i>93</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>43.3</i>		mg/L	<i>50.00</i>		<i>87</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>1.72</i>		mg/kg wet	<i>2.008</i>		<i>86</i>	<i>40-140</i>			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 19H0317

Notes and Definitions

- U Analyte included in the analysis, but not detected
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 19H0317

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

ESS Project ID: 19H0317

Date Received: 8/9/2019

Shipped/Delivered Via: ESS Courier

Project Due Date: 8/16/2019

Days for Project: 5 Day

1. Air bill manifest present? No
Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
Temp: 2.2 Iced with: Ice
5. Was COC signed and dated by client? Yes

6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. Were labs informed about short holds & rushes? Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
ESS Sample IDs: _____
Analysis: _____
TAT: _____

12. Were VOAs received? Yes / No
a. Air bubbles in aqueous VOAs? Yes / No
b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

Sample 18 received bpap-2b coc lists bpap-1b Sample 19 received bpap-3a coc lists bpap-1a sample 20 received bpap-3b coc lists 1b. Sample dates and times correct on both bottles and chains JC

Sample 17 rec'd bpap-2a, coc = bpap-4a

14. Was there a need to contact Project Manager?
a. Was there a need to contact the client?
Who was contacted? PM Yes / No
Date: 8/12/19 Time: _____ By: hdm
- Brian Fong-Murdock

Email notification sent to client

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	376018	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	376017	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	376016	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	376015	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
05	376014	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
06	376013	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
07	376012	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
08	376011	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
09	376010	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
10	376009	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
11	376008	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
12	376007	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
13	376006	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
14	376005	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
15	376004	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
16	376003	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
17	376002	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
18	376001	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
19	376000	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
20	375999	Yes	NA	Yes	4 oz. Jar - Unpres	NP	

2nd Review

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

ESS Project ID: 19H0317

Date Received: 8/9/2019

Were all containers scanned into storage/lab?

Initials: *[Signature]*

- Are barcode labels on correct containers?
- Are all Flashpoint stickers attached/container ID # circled?
- Are all Hex Chrome stickers attached?
- Are all QC stickers attached?
- Are VOA stickers attached if bubbles noted?

Yes / No
Yes / No / NA
Yes / No / NA
Yes / No / NA
Yes / No / NA

Completed By: *[Signature]*


Date & Time: 8/9/19 18:52

Reviewed By: *[Signature]*

Date & Time: 8/9/19 1859

Delivered By: *[Signature]*

Date & Time: 8/9/19 1859

 400 Unicorn Park Drive Woburn, MA 01801 PH: 781.721.4000 FX: 781.721.4073	Project Information		Project Location: Lawrence, MA		Page 2 of 3
	Project Name: Tombarello Site Investigation		Project Manager: L. Lombardo		
	Project Number: 1802441				
Send Report to: lombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaledas@geiconsultants.com, blee@geiconsultants.com		Preservative		Sample Handling	
Send EDD to: EastRegionData@geiconsultants.com		None	None	None	Samples Field Filtered YES NO NA

MCP PRESUMPTIVE CERTAINTY REQUIRED - **YES** NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO **NA**

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)							Sample Specific Remarks
		Date	Time													
1	1802441-LGSP-5B	8/8/2019	0930	Concrete	1	CWS		x	x							
2	1802441-LGSP-6A	8/8/2019	0940	Concrete	1	CWS	x									
3	1802441-LGSP-6B	8/8/2019	0945	Concrete	1	CWS		x	x							
4	1802441-SSP-1A	8/8/2019	1115	Concrete	1	CWS	x									
5	1802441-SSP-1B	8/8/2019	1120	Concrete	1	CWS		x	x							
6	1802441-SSP-2A	8/8/2019	1125	Concrete	1	CWS	x									
7	1802441-SSP-2B	8/8/2019	1130	Concrete	1	CWS		x	x							
8	1802441-SSP-3A	8/8/2019	1140	Concrete	1	CWS	x									
9	1802441-SSP-3B	8/8/2019	1145	Concrete	1	CWS		x	x							
10	1802441-SSP-4A	8/8/2019	1215	Concrete	1	CWS	x									
11	1802441-SSP-4B	8/8/2019	1220	Concrete	1	CWS		x	x							
12	1802441-SSP-5A	8/8/2019	1200	Asphalt	1	CWS	x									
13	1802441-WCP-1A	8/8/2019	1320	Concrete	1	CWS	x									

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Turnaround Time (Business days): Normal <u>X</u> Other _____ 10-Day _____ 7-Day _____ 5-Day _____ 3-Day _____	Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.
1. [Signature]	8/8/2019	1530	1. GEI Refrigerator		
Relinquished by: (signature)	Date:	Time:	Received by: (signature)		
2. GEI Refrigerator	8/9/19	1100	2. [Signature]		
Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Additional Requirements/Comments/Remarks: Manual Soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP. Zn cancelled per client 8/14/19 - PRB	
3. [Signature]	8/9/19	1000	3. [Signature]		
Relinquished by: (signature)	Date:	Time:	Received by: (signature)		
4. [Signature]	8/9/19	17:47	4. [Signature]		

100 temp 2.2



400 Unicorn Park Drive
 Woburn, MA 01801
 PH: 781.721.4000
 FX: 781.721.4073

Project Information
 Project Name: **Tombarello Site Investigation** Project Location: **Lawrence, MA**
 Project Number: **1802441** Project Manager: **L. Lombardo**

Send Report to: llombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaledas@geiconsultants.com, blee@geiconsultants.com
 Send EDD to: EastRegionData@geiconsultants.com

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED - YES NO
 If Yes, Are MCP Analytical Methods Required? YES NO NA
 Are Drinking Water Samples Submitted? YES NO NA
 If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus zinc (6010)									
		Date	Time															
14	1802441-WCP-1B	8/8/2019	1325	Concrete	1	CWS		X	X									
15	1802441-BPAP-1A	8/8/2019	1340	Concrete	1	CWS	X											
16	1802441-BPAP-1B	8/8/2019	1345	Concrete	1	CWS		X	X									
17	1802441-BPAP-1A-2A	8/8/2019	1355	Concrete	1	CWS	X											
18	1802441-BPAP-1B-2B	8/8/2019	1400	Concrete	1	CWS		X	X									
19	1802441-BPAP-1A-3A	8/8/2019	1410	Concrete	1	CWS	X											
20	1802441-BPAP-1B-3B	8/8/2019	1415	Concrete	1	CWS		X	X									
BFM 1802441-1802441-1802441				BFM 8/12/2019														

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):
 Normal X Other _____
 10-Day _____ 7-Day _____
 5-Day _____ 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/8/2019	1530	1. GEI Refrigerator
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	1100	2.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	1100	3.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	17:47	4. 8/9/19 18:40

Additional Requirements/Comments/Remarks:
 Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.
 Zn cancelled per client 8/14/19 - PRB

ice temp: 2.2

Project Information

Project Name: Tombarello Site Investigation **Project Location:** Lawrence, MA

Project Number: 1802441 **Project Manager:** L. Lombardo

Send Report to: lombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaledas@geiconsultants.com, blee@geiconsultants.com

Send EDD to: EastRegionData@geiconsultants.com

GEI Consultants
 400 Unicorn Park Drive
 Woburn, MA 01801
 PH: 781.721.4000
 FX: 781.721.4073

Sample Handling

Samples Field Filtered: YES NO NA

Sampled Shipped With Ice: YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED - YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)						
		Date	Time												
1	1802441-LGSP-5B	8/8/2019	0930	Concrete	1	CWS		x	x						
2	1802441-LGSP-6A	8/8/2019	0940	Concrete	1	CWS	x								
3	1802441-LGSP-6B	8/8/2019	0945	Concrete	1	CWS		x	x						
4	1802441-SSP-1A	8/8/2019	1115	Concrete	1	CWS	x								
5	1802441-SSP-1B	8/8/2019	1120	Concrete	1	CWS		x	x						
6	1802441-SSP-2A	8/8/2019	1125	Concrete	1	CWS	x								
7	1802441-SSP-2B	8/8/2019	1130	Concrete	1	CWS		x	x						
8	1802441-SSP-3A	8/8/2019	1140	Concrete	1	CWS	x								
9	1802441-SSP-3B	8/8/2019	1145	Concrete	1	CWS		x	x						
10	1802441-SSP-4A	8/8/2019	1215	Concrete	1	CWS	x								
11	1802441-SSP-4B	8/8/2019	1220	Concrete	1	CWS		x	x						
12	1802441-SSP-5A	8/8/2019	1200	Asphalt	1	CWS	x								
13	1802441-WCP-1A	8/8/2019	1320	Concrete	1	CWS	x								

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):

Normal Other _____

10-Day _____ 7-Day _____

5-Day _____ 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Relinquished by (signature)	Date	Time	Received by (signature)
1. [Signature]	8/8/2019	1530	1. GEI Refrigerator
2. GEI Refrigerator	8/9/19	1100	2. [Signature]
3. [Signature]	8/9/19	1000	3. [Signature]
4. [Signature]	8/9/19	17:47	4. [Signature]

Additional Requirements/Comments/Remarks:

Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

100temp 2.2



400 Unicorn Park Drive
 Woburn, MA 01801
 PH: 781.721.4000
 FX: 781.721.4073

Project Information
 Project Name: **Tombarello Site Investigation** Project Location: **Lawrence, MA**
 Project Number: **1802441** Project Manager: **L. Lombardo**

Send Report to: llombardo@geiconsultants.com,
 bfongmurdock@geiconsultants.com,
 csaledas@geiconsultants.com, blee@geiconsultants.com
 Send EDD to: EastRegionData@geiconsultants.com

Sample Handling

Samples Field Filtered

YES NO **NA**

Sampled Shipped With Ice

YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED - **YES** NO
 If Yes, Are MCP Analytical Methods Required? **YES** NO NA
 Are Drinking Water Samples Submitted? **YES** **NO** NA
 If Yes, Have Drinking Water Sampling Requirements Been Met? **YES** NO **NA**

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)									
		Date	Time															
14	1802441-WCP-1B	8/8/2019	1325	Concrete	1	CWS		X	X									
15	1802441-BPAP-1A	8/8/2019	1340	Concrete	1	CWS	X											
16	1802441-BPAP-1B	8/8/2019	1345	Concrete	1	CWS		X	X									
17	1802441-BPAP-1A-2A	8/8/2019	1355	Concrete	1	CWS	X											
18	1802441-BPAP-1B-2B	8/8/2019	1400	Concrete	1	CWS		X	X									
19	1802441-BPAP-1A-3A	8/8/2019	1410	Concrete	1	CWS	X											
20	1802441-BPAP-1B-3B	8/8/2019	1415	Concrete	1	CWS		X	X									
BFM 1802441-1802441-1802441				BFM 8/12/2019														

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):
 Normal Other _____
 10-Day _____ 7-Day _____
 5-Day _____ 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/8/2019	1530	1. GEI Refrigerator
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	1100	2.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	1100	3.
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
	8/9/19	17:47	4. 8/9/19 18:40

Additional Requirements/Comments/Remarks:

Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

ice temp: 2.2

Project Information

Project Name: **Tombarello Site Investigation** Project Location: **Lawrence, MA**

Project Number: **1802441** Project Manager: **L. Lombardo**

Send Report to: lombardo@geiconsultants.com, bfongmurdock@geiconsultants.com, csaledas@geiconsultants.com, blee@geiconsultants.com

Send EDD to: EastRegionData@geiconsultants.com



400 Unicorn Park Drive
 Woburn, MA 01801
 PH: 781.721.4000
 FX: 781.721.4073

Page 2 of 3

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED - **YES** NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)									
		Date	Time															
1	1802441-LGSP-5B	8/8/2019	0930	Concrete	1	CWS		x	x									
2	1802441-LGSP-6A	8/8/2019	0940	Concrete	1	CWS	x											
3	1802441-LGSP-6B	8/8/2019	0945	Concrete	1	CWS		x	x									
4	1802441-SSP-1A	8/8/2019	1115	Concrete	1	CWS	x											
5	1802441-SSP-1B	8/8/2019	1120	Concrete	1	CWS		x	x									
6	1802441-SSP-2A	8/8/2019	1125	Concrete	1	CWS	x											
7	1802441-SSP-2B	8/8/2019	1130	Concrete	1	CWS		x	x									
8	1802441-SSP-3A	8/8/2019	1140	Concrete	1	CWS	x											
9	1802441-SSP-3B	8/8/2019	1145	Concrete	1	CWS		x	x									
10	1802441-SSP-4A	8/8/2019	1215	Concrete	1	CWS	x											
11	1802441-SSP-4B	8/8/2019	1220	Concrete	1	CWS		x	x									
12	1802441-SSP-5A	8/8/2019	1200	Asphalt	1	CWS	x											
13	1802441-WCP-1A	8/8/2019	1320	Concrete	1	CWS	x											

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):

Normal X Other _____

10-Day _____ 7-Day _____

5-Day _____ 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

1. Relinquished by sampler: (signature)	Date: 8/8/2019	Time: 1530	Received by: (signature)
2. GEI Refrigerator	Date: 8/9/19	Time: 1100	Received by: (signature)
3. Relinquished by: (signature)	Date: 8/9/19	Time: 1000	Received by: (signature)
4. Relinquished by: (signature)	Date: 8/9/19	Time: 17:47	Received by: (signature)

Additional Requirements/Comments/Remarks:

Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

100 temp 2.2



400 Unicorn Park Drive
 Woburn, MA 01801
 PH: 781.721.4000
 FX: 781.721.4073

Project Information
 Project Name: **Tombarello Site Investigation** Project Location: **Lawrence, MA**
 Project Number: **1802441** Project Manager: **L. Lombardo**

Send Report to: llombardo@geiconsultants.com,
 bfongmurdock@geiconsultants.com,
 csaledas@geiconsultants.com, blee@geiconsultants.com
 Send EDD to: EastRegionData@geiconsultants.com

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED - YES NO
 If Yes, Are MCP Analytical Methods Required? YES NO NA
 Are Drinking Water Samples Submitted? YES NO NA
 If Yes, Have Drinking Water Sampling Requirements Been Met? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler (s) Initials	PCBs (8082)	EPH with Target PAHs (MAEPH)	RCRA 8 Metals plus Zinc (6010)									
		Date	Time															
14	1802441-WCP-1B	8/8/2019	1325	Concrete	1	CWS		X	X									
15	1802441-BPAP-1A	8/8/2019	1340	Concrete	1	CWS	X											
16	1802441-BPAP-1B	8/8/2019	1345	Concrete	1	CWS		X	X									
17	1802441-BPAP-1A	8/8/2019	1355	Concrete	1	CWS	X											
18	1802441-BPAP-1B	8/8/2019	1400	Concrete	1	CWS		X	X									
19	1802441-BPAP-1A	8/8/2019	1410	Concrete	1	CWS	X											
20	1802441-BPAP-1B	8/8/2019	1415	Concrete	1	CWS		X	X									
BJM	1802441-BPAP-1B																	

MCP Level Needed: GEI requires that, within the specified method, the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by: (signature)	Date: 8/8/2019	Time: 1530	Received by: (signature)
1.			1. GEI Refrigerator
Relinquished by: (signature)	Date: 8/9/19	Time: 1100	Received by: (signature)
2.			2.
Relinquished by: (signature)	Date: 8/9/19	Time: 1100	Received by: (signature)
3.			3.
Relinquished by: (signature)	Date: 8/9/19	Time: 1717	Received by: (signature)
4.			4. 8/9/19 18:40

Turnaround Time (Business days):
 Normal Other
 10-Day 7-Day
 5-Day 3-Day

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:
 Manual soxhlet extraction for PCBs. Analysis must be performed in accordance with GEI's Generic Brownfields QAPP.

ice temp: 2.2

MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix I

Laboratory Data Reports – Soil Disposal Samples



CERTIFICATE OF ANALYSIS

Leslie Lombardo
 GEI Consultants, Inc.
 400 Unicorn Park Drive
 Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 20C0466

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
 Laboratory Director

REVIEWED

By ESS Laboratory at 1:52 pm, Apr 17, 2020

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

SAMPLE RECEIPT

The following samples were received on March 13, 2020 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on March 13, 2020 at 20:29.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 April 1, 2020: This report has been revised to include TPH results for samples 20C0466-01 and 20C0466-03 per the client's request.

Revision 2 April 16, 2020: This report has been revised to include Pyridine for samples 20C0466-01 and 20C0466-03 per the client's request.

Lab Number	Sample Name	Matrix	Analysis
20C0466-01	1802441-Lot1-DISP01	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8100M, 8260B Low, 8270D, 9045
20C0466-02	1802441-Lot1-DISP02-Grab	Soil	8260B Low
20C0466-03	1802441-Lot1-DISP02-Comp	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8100M, 8270D, 9045



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

- D0C0330-CCV1 [Continuing Calibration %Diff/Drift is below control limit \(CD-\).](#)
Acetone (21% @ 20%), Chloroethane (21% @ 20%), Chloromethane (22% @ 20%), Tetrahydrofuran (22% @ 20%), Vinyl Chloride (22% @ 20%)
- D0C0358-CCV1 [Continuing Calibration %Diff/Drift is above control limit \(CD+\).](#)
Bromomethane (22% @ 20%)
- DC01838-BSD1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)
Acetone (21% @ 20%), Bromomethane (21% @ 20%)

8270D Semi-Volatile Organic Compounds

- 20C0466-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
- 20C0466-03 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
- D0C0313-CCV1 [Calibration required quadratic regression \(Q\).](#)
2,4-Dinitrophenol (129% @ 80-120%), Pentachlorophenol (109% @ 80-120%)
- D0C0313-CCV1 [Continuing Calibration %Diff/Drift is above control limit \(CD+\).](#)
2,4-Dinitrophenol (29% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **20C0466-01 through 20C0466-03**

Matrices: () Ground Water/Surface Water Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|--|---|---|---|---|------------------------------------|
| <input checked="" type="checkbox"/> 8260 VOC
CAM II A | <input checked="" type="checkbox"/> 7470/7471 Hg
CAM III B | () MassDEP VPH
(GC/PID/FID)
CAM IV A | <input checked="" type="checkbox"/> 8082 PCB
CAM V A | () 9014 Total
Cyanide/PAC
CAM VI A | () 6860 Perchlorate
CAM VIII B |
| <input checked="" type="checkbox"/> 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 |
| <input checked="" type="checkbox"/> 6010 Metals
CAM III A | () 6020 Metals
CAM III D | () MassDEP EPH
CAM IV B | () 8151 Herbicides
CAM V C | () 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 the 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. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes () No ()
b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? 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 protocols(s)? Yes () No *
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 *
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes () No *

***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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: March 20, 2020
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	6.61 (2.20)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Barium	171 (2.20)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Cadmium	1.17 (0.44)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Chromium	33.9 (0.88)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Lead	392 (4.41)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Mercury	0.559 (0.033)		7471B		1	MKS	03/17/20 8:33	0.68	40	DC01643
Selenium	ND (4.41)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642
Silver	ND (0.44)		6010C		1	KJK	03/17/20 20:54	2.57	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.281 (0.050)		1311/6010C		1	KJK	03/19/20 20:36	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1,1-Trichloroethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1,2,2-Tetrachloroethane	0.0059 (0.0014)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1,2-Trichloroethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1-Dichloroethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1-Dichloroethene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,1-Dichloropropene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2,3-Trichlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2,3-Trichloropropane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2,4-Trichlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2,4-Trimethylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2-Dibromo-3-Chloropropane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2-Dibromoethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2-Dichloroethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,2-Dichloropropane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,3,5-Trimethylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,3-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,3-Dichloropropane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,4-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
1,4-Dioxane	ND (0.0682)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
2,2-Dichloropropane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
2-Butanone	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
2-Chlorotoluene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
2-Hexanone	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
4-Chlorotoluene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
4-Isopropyltoluene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
4-Methyl-2-Pentanone	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Acetone	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Benzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Bromobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Bromochloromethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Bromoform	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Bromomethane	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Carbon Disulfide	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Carbon Tetrachloride	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Chlorobenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Chloroethane	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Chloroform	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Chloromethane	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
cis-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
cis-1,3-Dichloropropene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Dibromochloromethane	ND (0.0014)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Dibromomethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Dichlorodifluoromethane	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Diethyl Ether	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Di-isopropyl ether	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Ethyl tertiary-butyl ether	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Ethylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Hexachlorobutadiene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Isopropylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Methyl tert-Butyl Ether	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Methylene Chloride	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Naphthalene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
n-Butylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
n-Propylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
sec-Butylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Styrene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
tert-Butylbenzene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Tertiary-amyl methyl ether	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Tetrachloroethene	0.0089 (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Tetrahydrofuran	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Toluene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
trans-1,3-Dichloropropene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Trichloroethene	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Trichlorofluoromethane	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Vinyl Chloride	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Xylene O	ND (0.0034)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Xylene P,M	ND (0.0068)		8260B Low		1	03/18/20 20:39	D0C0330	DC01838
Xylenes (Total)	ND (0.00682)		8260B Low		1	03/18/20 20:39		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>89 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>77 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>94 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>108 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 19.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1221	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1232	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1242	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1248	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1254	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1260	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1262	ND (0.06)		8082A		1	03/18/20 21:32		DC01701
Aroclor 1268	ND (0.06)		8082A		1	03/18/20 21:32		DC01701

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	65 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	67 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	71 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	89 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 3/24/20 14:49

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	352 (58.4)		8100M		5	03/25/20 23:09	D0C0445	DC02311
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		88 %		40-140				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
1,2-Dichlorobenzene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
1,3-Dichlorobenzene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
1,4-Dichlorobenzene	ND (0.378)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4,5-Trichlorophenol	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4,6-Trichlorophenol	ND (0.369)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4-Dichlorophenol	ND (0.374)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4-Dimethylphenol	ND (0.338)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4-Dinitrophenol	ND (2.51)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,4-Dinitrotoluene	ND (0.482)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2,6-Dinitrotoluene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2-Chloronaphthalene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2-Chlorophenol	ND (0.423)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2-Methylnaphthalene	ND (0.324)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2-Methylphenol	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
2-Nitrophenol	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
3,3'-Dichlorobenzidine	ND (0.752)		8270D		2	03/19/20 2:54	D0C0313	DC01609
3+4-Methylphenol	ND (3.00)		8270D		2	03/19/20 2:54	D0C0313	DC01609
4-Bromophenyl-phenylether	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
4-Chloroaniline	ND (0.752)		8270D		2	03/19/20 2:54	D0C0313	DC01609
4-Nitrophenol	ND (7.52)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Acenaphthene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Acenaphthylene	ND (0.752)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Acetophenone	ND (3.00)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Aniline	ND (7.52)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Anthracene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Azobenzene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Benzo(a)anthracene	2.28 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Benzo(a)pyrene	2.52 (0.752)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Benzo(b)fluoranthene	2.42 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Benzo(g,h,i)perylene	1.75 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Benzo(k)fluoranthene	1.72 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
bis(2-Chloroethyl)ether	ND (0.405)		8270D		2	03/19/20 2:54	D0C0313	DC01609
bis(2-chloroisopropyl)Ether	ND (0.401)		8270D		2	03/19/20 2:54	D0C0313	DC01609
bis(2-Ethylhexyl)phthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Butylbenzylphthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Chrysene	2.30 (0.752)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Dibenzo(a,h)Anthracene	0.575 (0.230)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Dibenzofuran	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Diethylphthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Dimethylphthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Di-n-butylphthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Di-n-octylphthalate	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Fluoranthene	4.54 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Fluorene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Hexachlorobenzene	ND (0.252)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Hexachlorobutadiene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Hexachloroethane	ND (0.378)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Indeno(1,2,3-cd)Pyrene	1.50 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Isophorone	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Naphthalene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Nitrobenzene	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
N-Nitrosodimethylamine	ND (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Pentachlorophenol	ND (7.52)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Phenanthrene	2.43 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Phenol	ND (0.365)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Pyrene	4.39 (1.50)		8270D		2	03/19/20 2:54	D0C0313	DC01609
Pyridine	ND (7.52)		8270D		2	03/19/20 2:54	D0C0313	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	56 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	77 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	62 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		65 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		54 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		59 %		30-130				
<i>Surrogate: Phenol-d6</i>		62 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		83 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.75 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.6 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01620
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/16/20 10:58	mg/kg	DC01613
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/16/20 10:58	mg/kg	DC01613



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP01
Date Sampled: 03/12/20 08:40
Percent Solids: 88
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-01
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Grab
Date Sampled: 03/12/20 08:50
Percent Solids: 93
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1,1-Trichloroethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1,2,2-Tetrachloroethane	ND (0.0013)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1,2-Trichloroethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1-Dichloroethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1-Dichloroethene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,1-Dichloropropene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2,3-Trichlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2,3-Trichloropropane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2,4-Trichlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2,4-Trimethylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2-Dibromo-3-Chloropropane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2-Dibromoethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2-Dichlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2-Dichloroethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,2-Dichloropropane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,3,5-Trimethylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,3-Dichlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,3-Dichloropropane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,4-Dichlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
1,4-Dioxane	ND (0.0642)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
2,2-Dichloropropane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
2-Butanone	0.0154 (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
2-Chlorotoluene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
2-Hexanone	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
4-Chlorotoluene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
4-Isopropyltoluene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
4-Methyl-2-Pentanone	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Acetone	0.123 (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Benzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Bromobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Bromochloromethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Grab
Date Sampled: 03/12/20 08:50
Percent Solids: 93
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Bromoform	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Bromomethane	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Carbon Disulfide	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Carbon Tetrachloride	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Chlorobenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Chloroethane	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Chloroform	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Chloromethane	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
cis-1,2-Dichloroethene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
cis-1,3-Dichloropropene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Dibromochloromethane	ND (0.0013)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Dibromomethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Dichlorodifluoromethane	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Diethyl Ether	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Di-isopropyl ether	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Ethyl tertiary-butyl ether	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Ethylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Hexachlorobutadiene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Isopropylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Methyl tert-Butyl Ether	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Methylene Chloride	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Naphthalene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
n-Butylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
n-Propylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
sec-Butylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Styrene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
tert-Butylbenzene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Tertiary-amyl methyl ether	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Tetrachloroethene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Tetrahydrofuran	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Toluene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Grab
Date Sampled: 03/12/20 08:50
Percent Solids: 93
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
trans-1,3-Dichloropropene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Trichloroethene	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Trichlorofluoromethane	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Vinyl Chloride	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Xylene O	ND (0.0032)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Xylene P,M	ND (0.0064)		8260B Low		1	03/19/20 16:58	D0C0358	DC01938
Xylenes (Total)	ND (0.00642)		8260B Low		1	03/19/20 16:58		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>109 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>82 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>112 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	4.93 (2.24)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Barium	57.3 (2.24)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Cadmium	ND (0.45)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Chromium	15.6 (0.90)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Lead	185 (4.48)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Mercury	0.059 (0.027)		7471B		1	MKS	03/17/20 8:35	0.8	40	DC01643
Selenium	ND (4.48)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642
Silver	ND (0.45)		6010C		1	KJK	03/17/20 21:13	2.41	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	1.26 (0.050)		1311/6010C		1	KJK	03/19/20 21:08	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 20.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1221	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1232	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1242	0.1 (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1248	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1254	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1260	0.06 (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1262	ND (0.05)		8082A		1	03/19/20 13:03		DC01930
Aroclor 1268	ND (0.05)		8082A		1	03/19/20 13:03		DC01930

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	70 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	75 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	66 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	86 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 3/24/20 14:49

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	876 (111)		8100M		10	03/25/20 23:42	D0C0445	DC02311
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		<i>107 %</i>		<i>40-140</i>				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 15.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
1,2-Dichlorobenzene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
1,3-Dichlorobenzene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
1,4-Dichlorobenzene	ND (0.173)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4,5-Trichlorophenol	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4,6-Trichlorophenol	ND (0.169)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4-Dichlorophenol	ND (0.171)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4-Dimethylphenol	ND (0.155)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4-Dinitrophenol	ND (1.15)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,4-Dinitrotoluene	ND (0.221)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2,6-Dinitrotoluene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2-Chloronaphthalene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2-Chlorophenol	ND (0.194)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2-Methylnaphthalene	0.298 (0.148)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2-Methylphenol	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
2-Nitrophenol	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
3,3'-Dichlorobenzidine	ND (0.344)		8270D		2	03/19/20 3:20	D0C0313	DC01609
3+4-Methylphenol	ND (1.38)		8270D		2	03/19/20 3:20	D0C0313	DC01609
4-Bromophenyl-phenylether	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
4-Chloroaniline	ND (0.344)		8270D		2	03/19/20 3:20	D0C0313	DC01609
4-Nitrophenol	ND (3.44)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Acenaphthene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Acenaphthylene	1.40 (0.344)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Acetophenone	ND (1.38)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Aniline	ND (3.44)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Anthracene	2.30 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Azobenzene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Benzo(a)anthracene	5.58 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Benzo(a)pyrene	5.77 (0.344)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Benzo(b)fluoranthene	4.97 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Benzo(g,h,i)perylene	3.21 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Benzo(k)fluoranthene	4.00 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 15.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
bis(2-Chloroethyl)ether	ND (0.186)		8270D		2	03/19/20 3:20	D0C0313	DC01609
bis(2-chloroisopropyl)Ether	ND (0.184)		8270D		2	03/19/20 3:20	D0C0313	DC01609
bis(2-Ethylhexyl)phthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Butylbenzylphthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Chrysene	5.41 (0.344)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Dibenzo(a,h)Anthracene	1.16 (0.105)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Dibenzofuran	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Diethylphthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Dimethylphthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Di-n-butylphthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Di-n-octylphthalate	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Fluoranthene	11.1 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Fluorene	0.826 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Hexachlorobenzene	ND (0.115)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Hexachlorobutadiene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Hexachloroethane	ND (0.173)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Indeno(1,2,3-cd)Pyrene	3.07 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Isophorone	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Naphthalene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Nitrobenzene	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
N-Nitrosodimethylamine	ND (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Pentachlorophenol	ND (3.44)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Phenanthrene	8.30 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Phenol	ND (0.167)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Pyrene	10.8 (0.687)		8270D		2	03/19/20 3:20	D0C0313	DC01609
Pyridine	ND (3.44)		8270D		2	03/19/20 3:20	D0C0313	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	49 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	73 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	54 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 15.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		57 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		47 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		51 %		30-130				
<i>Surrogate: Phenol-d6</i>		53 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		78 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.15 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.3 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01620
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/16/20 10:58	mg/kg	DC01613
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/16/20 10:58	mg/kg	DC01613



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot1-DISP02-Comp
Date Sampled: 03/12/20 11:30
Percent Solids: 93
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0466
ESS Laboratory Sample ID: 20C0466-03
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch DC01642 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet
Barium	ND	2.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.00	mg/kg wet
Lead	ND	5.00	mg/kg wet
Selenium	ND	5.00	mg/kg wet
Silver	ND	0.50	mg/kg wet

LCS

Arsenic	187	7.69	mg/kg wet	202.0	93	80-120
Barium	320	7.69	mg/kg wet	343.0	93	80-120
Cadmium	128	1.54	mg/kg wet	149.0	86	80-120
Chromium	170	3.08	mg/kg wet	182.0	94	80-120
Lead	318	15.4	mg/kg wet	333.0	95	80-120
Selenium	158	15.4	mg/kg wet	169.0	93	80-120
Silver	45.2	1.54	mg/kg wet	48.90	92	80-120

LCS Dup

Arsenic	194	8.20	mg/kg wet	202.0	96	80-120	4	20
Barium	341	8.20	mg/kg wet	343.0	100	80-120	7	20
Cadmium	135	1.64	mg/kg wet	149.0	91	80-120	6	20
Chromium	176	3.28	mg/kg wet	182.0	97	80-120	3	20
Lead	333	16.4	mg/kg wet	333.0	100	80-120	5	20
Selenium	162	16.4	mg/kg wet	169.0	96	80-120	2	20
Silver	45.2	1.64	mg/kg wet	48.90	92	80-120	0.1	20

Batch DC01643 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet
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LCS

Mercury	9.60	0.550	mg/kg wet	7.760	124	71-125
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LCS Dup

Mercury	9.15	0.574	mg/kg wet	7.760	118	71-125	5	20
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1311 TCLP Metals

Batch DC01937 - 3005A_TCLP

Blank

Lead	ND	0.050	mg/L
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LCS

Lead	0.469	0.050	mg/L	0.5000	94	80-120
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LCS Dup

Lead	0.472	0.050	mg/L	0.5000	94	80-120	0.7	20
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5035/8260B Volatile Organic Compounds / Low Level



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	0.0292	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: 4-Bromofluorobenzene	0.0448		mg/kg wet	0.05000		90	70-130			
Surrogate: Dibromofluoromethane	0.0463		mg/kg wet	0.05000		93	70-130			
Surrogate: Toluene-d8	0.0499		mg/kg wet	0.05000		100	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
1,1,1-Trichloroethane	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
1,1,2,2-Tetrachloroethane	0.0459	0.0020	mg/kg wet	0.05000		92	70-130			
1,1,2-Trichloroethane	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			
1,1-Dichloroethane	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
1,1-Dichloroethene	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
1,1-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,3-Trichlorobenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
1,2,3-Trichloropropane	0.0421	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,4-Trichlorobenzene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,4-Trimethylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,2-Dibromo-3-Chloropropane	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
1,2-Dibromoethane	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

1,2-Dichlorobenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichloroethane	0.0449	0.0050	mg/kg wet	0.05000		90	70-130			
1,2-Dichloropropane	0.0419	0.0050	mg/kg wet	0.05000		84	70-130			
1,3,5-Trimethylbenzene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
1,3-Dichlorobenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,3-Dichloropropane	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
1,4-Dichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,4-Dioxane	0.858	0.100	mg/kg wet	1.000		86	70-130			
2,2-Dichloropropane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
2-Butanone	0.201	0.0100	mg/kg wet	0.2500		80	70-130			
2-Chlorotoluene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
2-Hexanone	0.214	0.0100	mg/kg wet	0.2500		86	70-130			
4-Chlorotoluene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
4-Isopropyltoluene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
4-Methyl-2-Pentanone	0.208	0.0100	mg/kg wet	0.2500		83	70-130			
Acetone	0.174	0.0100	mg/kg wet	0.2500		70	70-130			
Benzene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
Bromobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Bromochloromethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Bromoform	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
Bromomethane	0.0398	0.0100	mg/kg wet	0.05000		80	70-130			
Carbon Disulfide	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Carbon Tetrachloride	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chlorobenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chloroethane	0.0373	0.0100	mg/kg wet	0.05000		75	70-130			
Chloroform	0.0443	0.0050	mg/kg wet	0.05000		89	70-130			
Chloromethane	0.0369	0.0100	mg/kg wet	0.05000		74	70-130			
cis-1,2-Dichloroethene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
cis-1,3-Dichloropropene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
Dibromochloromethane	0.0452	0.0020	mg/kg wet	0.05000		90	70-130			
Dibromomethane	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
Dichlorodifluoromethane	0.0454	0.0100	mg/kg wet	0.05000		91	70-130			
Diethyl Ether	0.0412	0.0050	mg/kg wet	0.05000		82	70-130			
Di-isopropyl ether	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
Ethyl tertiary-butyl ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Ethylbenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Hexachlorobutadiene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Isopropylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
Methyl tert-Butyl Ether	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Methylene Chloride	0.0463	0.0100	mg/kg wet	0.05000		93	70-130			
Naphthalene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
n-Butylbenzene	0.0398	0.0050	mg/kg wet	0.05000		80	70-130			
n-Propylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
sec-Butylbenzene	0.0462	0.0050	mg/kg wet	0.05000		92	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Styrene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
tert-Butylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Tertiary-amyl methyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Tetrahydrofuran	0.0374	0.0050	mg/kg wet	0.05000		75	70-130			
Toluene	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
trans-1,2-Dichloroethene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
trans-1,3-Dichloropropene	0.0424	0.0050	mg/kg wet	0.05000		85	70-130			
Trichloroethene	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Trichlorofluoromethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Vinyl Chloride	0.0368	0.0100	mg/kg wet	0.05000		74	70-130			
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Xylene P,M	0.0946	0.0100	mg/kg wet	0.1000		95	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0472</i>		mg/kg wet	<i>0.05000</i>		<i>94</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0484</i>		mg/kg wet	<i>0.05000</i>		<i>97</i>	<i>70-130</i>			
<i>Surrogate: Dibromofluoromethane</i>	<i>0.0482</i>		mg/kg wet	<i>0.05000</i>		<i>96</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0469</i>		mg/kg wet	<i>0.05000</i>		<i>94</i>	<i>70-130</i>			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
1,1,1-Trichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
1,1,2,2-Tetrachloroethane	0.0495	0.0020	mg/kg wet	0.05000		99	70-130	8	20	
1,1,2-Trichloroethane	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
1,1-Dichloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	10	20	
1,1-Dichloroethene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,1-Dichloropropene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,3-Trichlorobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,2,3-Trichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	9	20	
1,2,4-Trichlorobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,4-Trimethylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	9	20	
1,2-Dibromo-3-Chloropropane	0.0436	0.0050	mg/kg wet	0.05000		87	70-130	8	20	
1,2-Dibromoethane	0.0527	0.0050	mg/kg wet	0.05000		105	70-130	12	20	
1,2-Dichlorobenzene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	6	20	
1,2-Dichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,2-Dichloropropane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	8	20	
1,3,5-Trimethylbenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
1,3-Dichlorobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	6	20	
1,3-Dichloropropane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,4-Dichlorobenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
1,4-Dioxane	0.904	0.100	mg/kg wet	1.000		90	70-130	5	20	
2,2-Dichloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	8	20	
2-Butanone	0.222	0.0100	mg/kg wet	0.2500		89	70-130	10	20	
2-Chlorotoluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	6	20	
2-Hexanone	0.249	0.0100	mg/kg wet	0.2500		100	70-130	15	20	
4-Chlorotoluene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	7	20	
4-Isopropyltoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	9	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

4-Methyl-2-Pentanone	0.230	0.0100	mg/kg wet	0.2500		92	70-130	10	20	
Acetone	0.216	0.0100	mg/kg wet	0.2500		86	70-130	21	20	D+
Benzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	9	20	
Bromobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	7	20	
Bromochloromethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Bromodichloromethane	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	9	20	
Bromoform	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Bromomethane	0.0492	0.0100	mg/kg wet	0.05000		98	70-130	21	20	D+
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Carbon Tetrachloride	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	9	20	
Chlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
Chloroethane	0.0413	0.0100	mg/kg wet	0.05000		83	70-130	10	20	
Chloroform	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Chloromethane	0.0412	0.0100	mg/kg wet	0.05000		82	70-130	11	20	
cis-1,2-Dichloroethene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	9	20	
cis-1,3-Dichloropropene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	8	20	
Dibromochloromethane	0.0509	0.0020	mg/kg wet	0.05000		102	70-130	12	20	
Dibromomethane	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
Dichlorodifluoromethane	0.0506	0.0100	mg/kg wet	0.05000		101	70-130	11	20	
Diethyl Ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	8	20	
Di-isopropyl ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	10	20	
Ethyl tertiary-butyl ether	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	9	20	
Ethylbenzene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	10	20	
Hexachlorobutadiene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Isopropylbenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	7	20	
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	7	20	
Methylene Chloride	0.0483	0.0100	mg/kg wet	0.05000		97	70-130	4	20	
Naphthalene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	15	20	
n-Butylbenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130	13	20	
n-Propylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	8	20	
sec-Butylbenzene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
Styrene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	12	20	
tert-Butylbenzene	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Tertiary-amyl methyl ether	0.0600	0.0050	mg/kg wet	0.05000		120	70-130	8	20	
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	13	20	
Tetrahydrofuran	0.0425	0.0050	mg/kg wet	0.05000		85	70-130	13	20	
Toluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
trans-1,2-Dichloroethene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
trans-1,3-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
Trichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Trichlorofluoromethane	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	8	20	
Vinyl Chloride	0.0415	0.0100	mg/kg wet	0.05000		83	70-130	12	20	
Xylene O	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	10	20	
Xylene P,M	0.105	0.0100	mg/kg wet	0.1000		105	70-130	10	20	
Surrogate: 1,2-Dichloroethane-d4	0.0471		mg/kg wet	0.05000		94	70-130			



CERTIFICATE OF ANALYSIS

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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Surrogate: 4-Bromofluorobenzene	0.0493		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: Toluene-d8	0.0485		mg/kg wet	0.05000		97	70-130			

Batch DC01938 - 5035

Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							



CERTIFICATE OF ANALYSIS

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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0551		mg/kg wet	0.05000		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.0492		mg/kg wet	0.05000		98	70-130			
Surrogate: Dibromofluoromethane	0.0531		mg/kg wet	0.05000		106	70-130			
Surrogate: Toluene-d8	0.0486		mg/kg wet	0.05000		97	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
1,1,1-Trichloroethane	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
1,1,2,2-Tetrachloroethane	0.0478	0.0020	mg/kg wet	0.05000		96	70-130			
1,1,2-Trichloroethane	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
1,1-Dichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
1,1-Dichloroethene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
1,1-Dichloropropene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
1,2,3-Trichlorobenzene	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

1,2,3-Trichloropropane	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,4-Trichlorobenzene	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
1,2,4-Trimethylbenzene	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromo-3-Chloropropane	0.0387	0.0050	mg/kg wet	0.05000		77	70-130			
1,2-Dibromoethane	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,2-Dichlorobenzene	0.0461	0.0050	mg/kg wet	0.05000		92	70-130			
1,2-Dichloroethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
1,2-Dichloropropane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,3,5-Trimethylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
1,3-Dichloropropane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dichlorobenzene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
1,4-Dioxane	0.850	0.100	mg/kg wet	1.000		85	70-130			
2,2-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
2-Butanone	0.249	0.0100	mg/kg wet	0.2500		100	70-130			
2-Chlorotoluene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
2-Hexanone	0.221	0.0100	mg/kg wet	0.2500		88	70-130			
4-Chlorotoluene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
4-Isopropyltoluene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
4-Methyl-2-Pentanone	0.236	0.0100	mg/kg wet	0.2500		95	70-130			
Acetone	0.244	0.0100	mg/kg wet	0.2500		97	70-130			
Benzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
Bromobenzene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
Bromochloromethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
Bromoform	0.0379	0.0050	mg/kg wet	0.05000		76	70-130			
Bromomethane	0.0578	0.0100	mg/kg wet	0.05000		116	70-130			
Carbon Disulfide	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
Carbon Tetrachloride	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
Chlorobenzene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Chloroethane	0.0494	0.0100	mg/kg wet	0.05000		99	70-130			
Chloroform	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
Chloromethane	0.0472	0.0100	mg/kg wet	0.05000		94	70-130			
cis-1,2-Dichloroethene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
cis-1,3-Dichloropropene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Dibromochloromethane	0.0440	0.0020	mg/kg wet	0.05000		88	70-130			
Dibromomethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
Dichlorodifluoromethane	0.0504	0.0100	mg/kg wet	0.05000		101	70-130			
Diethyl Ether	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Di-isopropyl ether	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
Ethyl tertiary-butyl ether	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Ethylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Hexachlorobutadiene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
Isopropylbenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Methyl tert-Butyl Ether	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			



CERTIFICATE OF ANALYSIS

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Quality Control Data

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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Methylene Chloride	0.0472	0.0100	mg/kg wet	0.05000		94	70-130			
Naphthalene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
n-Butylbenzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
n-Propylbenzene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
sec-Butylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
Styrene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
tert-Butylbenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
Tertiary-amyl methyl ether	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Tetrachloroethene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Tetrahydrofuran	0.0434	0.0050	mg/kg wet	0.05000		87	70-130			
Toluene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
trans-1,2-Dichloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,3-Dichloropropene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
Trichloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Trichlorofluoromethane	0.0541	0.0050	mg/kg wet	0.05000		108	70-130			
Vinyl Chloride	0.0521	0.0100	mg/kg wet	0.05000		104	70-130			
Xylene O	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
Xylene P,M	0.0971	0.0100	mg/kg wet	0.1000		97	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0514		mg/kg wet	0.05000		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.0499		mg/kg wet	0.05000		100	70-130			
Surrogate: Dibromofluoromethane	0.0512		mg/kg wet	0.05000		102	70-130			
Surrogate: Toluene-d8	0.0496		mg/kg wet	0.05000		99	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,1,1-Trichloroethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	1	20	
1,1,2,2-Tetrachloroethane	0.0505	0.0020	mg/kg wet	0.05000		101	70-130	5	20	
1,1,2-Trichloroethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	6	20	
1,1-Dichloroethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,1-Dichloroethene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,1-Dichloropropene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
1,2,3-Trichlorobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	7	20	
1,2,3-Trichloropropane	0.0450	0.0050	mg/kg wet	0.05000		90	70-130	6	20	
1,2,4-Trichlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	7	20	
1,2,4-Trimethylbenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	4	20	
1,2-Dibromo-3-Chloropropane	0.0416	0.0050	mg/kg wet	0.05000		83	70-130	7	20	
1,2-Dibromoethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	5	20	
1,2-Dichlorobenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	6	20	
1,2-Dichloroethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	4	20	
1,2-Dichloropropane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	2	20	
1,3,5-Trimethylbenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	5	20	
1,3-Dichlorobenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	4	20	
1,3-Dichloropropane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	5	20	
1,4-Dichlorobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	6	20	
1,4-Dioxane	0.942	0.100	mg/kg wet	1.000		94	70-130	10	20	
2,2-Dichloropropane	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	3	20	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

2-Butanone	0.259	0.0100	mg/kg wet	0.2500		104	70-130	4	20	
2-Chlorotoluene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
2-Hexanone	0.227	0.0100	mg/kg wet	0.2500		91	70-130	3	20	
4-Chlorotoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
4-Isopropyltoluene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
4-Methyl-2-Pentanone	0.246	0.0100	mg/kg wet	0.2500		98	70-130	4	20	
Acetone	0.240	0.0100	mg/kg wet	0.2500		96	70-130	1	20	
Benzene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
Bromobenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
Bromochloromethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	6	20	
Bromodichloromethane	0.0562	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Bromoform	0.0401	0.0050	mg/kg wet	0.05000		80	70-130	6	20	
Bromomethane	0.0605	0.0100	mg/kg wet	0.05000		121	70-130	5	20	
Carbon Disulfide	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
Carbon Tetrachloride	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Chlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
Chloroethane	0.0505	0.0100	mg/kg wet	0.05000		101	70-130	2	20	
Chloroform	0.0533	0.0050	mg/kg wet	0.05000		107	70-130	3	20	
Chloromethane	0.0484	0.0100	mg/kg wet	0.05000		97	70-130	2	20	
cis-1,2-Dichloroethene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	4	20	
cis-1,3-Dichloropropene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	4	20	
Dibromochloromethane	0.0466	0.0020	mg/kg wet	0.05000		93	70-130	6	20	
Dibromomethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	6	20	
Dichlorodifluoromethane	0.0512	0.0100	mg/kg wet	0.05000		102	70-130	2	20	
Diethyl Ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	5	20	
Di-isopropyl ether	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	4	20	
Ethyl tertiary-butyl ether	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	5	20	
Ethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	2	20	
Hexachlorobutadiene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
Isopropylbenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
Methyl tert-Butyl Ether	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	5	20	
Methylene Chloride	0.0492	0.0100	mg/kg wet	0.05000		98	70-130	4	20	
Naphthalene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	8	20	
n-Butylbenzene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
n-Propylbenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
sec-Butylbenzene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	3	20	
Styrene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
tert-Butylbenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	4	20	
Tertiary-amyl methyl ether	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	5	20	
Tetrachloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	4	20	
Tetrahydrofuran	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	4	20	
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
trans-1,2-Dichloroethene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
trans-1,3-Dichloropropene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	6	20	
Trichloroethene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	2	20	



CERTIFICATE OF ANALYSIS

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Quality Control Data

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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Trichlorofluoromethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	1	20	
Vinyl Chloride	0.0525	0.0100	mg/kg wet	0.05000		105	70-130	0.8	20	
Xylene O	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Xylene P,M	0.101	0.0100	mg/kg wet	0.1000		101	70-130	4	20	
Surrogate: 1,2-Dichloroethane-d4	0.0501		mg/kg wet	0.05000		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.0497		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0507		mg/kg wet	0.05000		101	70-130			
Surrogate: Toluene-d8	0.0496		mg/kg wet	0.05000		99	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch DC01701 - 3540C

Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0192		mg/kg wet	0.02500		77	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0184		mg/kg wet	0.02500		74	30-150			
Surrogate: Tetrachloro-m-xylene	0.0169		mg/kg wet	0.02500		68	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0194		mg/kg wet	0.02500		78	30-150			

LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			

Surrogate: Decachlorobiphenyl	0.0225		mg/kg wet	0.02500		90	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0216		mg/kg wet	0.02500		86	30-150			
Surrogate: Tetrachloro-m-xylene	0.0207		mg/kg wet	0.02500		83	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0223		mg/kg wet	0.02500		89	30-150			



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Quality Control Data

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8082A Polychlorinated Biphenyls (PCB)

Batch DC01701 - 3540C

LCS Dup

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		82	40-140	5	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		85	40-140	1	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		87	40-140	2	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		83	40-140	4	30	
<i>Surrogate: Decachlorobiphenyl</i>	<i>0.0220</i>		mg/kg wet	<i>0.02500</i>		<i>88</i>	<i>30-150</i>			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>0.0209</i>		mg/kg wet	<i>0.02500</i>		<i>84</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>0.0203</i>		mg/kg wet	<i>0.02500</i>		<i>81</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>0.0222</i>		mg/kg wet	<i>0.02500</i>		<i>89</i>	<i>30-150</i>			

Batch DC01930 - 3540C

Blank

Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
<i>Surrogate: Decachlorobiphenyl</i>	<i>0.0198</i>		mg/kg wet	<i>0.02500</i>		<i>79</i>	<i>30-150</i>			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>0.0195</i>		mg/kg wet	<i>0.02500</i>		<i>78</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>0.0179</i>		mg/kg wet	<i>0.02500</i>		<i>72</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>0.0208</i>		mg/kg wet	<i>0.02500</i>		<i>83</i>	<i>30-150</i>			

LCS

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		89	40-140			
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		91	40-140			
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		93	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		90	40-140			
<i>Surrogate: Decachlorobiphenyl</i>	<i>0.0227</i>		mg/kg wet	<i>0.02500</i>		<i>91</i>	<i>30-150</i>			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>0.0221</i>		mg/kg wet	<i>0.02500</i>		<i>88</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>0.0217</i>		mg/kg wet	<i>0.02500</i>		<i>87</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>0.0236</i>		mg/kg wet	<i>0.02500</i>		<i>94</i>	<i>30-150</i>			



CERTIFICATE OF ANALYSIS

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Quality Control Data

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8082A Polychlorinated Biphenyls (PCB)

Batch DC01930 - 3540C

LCS Dup

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140	3	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		88	40-140	3	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140	4	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		86	40-140	4	30	
<i>Surrogate: Decachlorobiphenyl</i>	<i>0.0219</i>		mg/kg wet	<i>0.02500</i>		<i>87</i>	<i>30-150</i>			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>0.0211</i>		mg/kg wet	<i>0.02500</i>		<i>84</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>0.0209</i>		mg/kg wet	<i>0.02500</i>		<i>84</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>0.0230</i>		mg/kg wet	<i>0.02500</i>		<i>92</i>	<i>30-150</i>			

8100M Total Petroleum Hydrocarbons

Batch DC02311 - 3546

Blank

Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Hexatriacontane (C36)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	10.0	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							

<i>Surrogate: O-Terphenyl</i>	<i>5.11</i>		mg/kg wet	<i>5.000</i>		<i>102</i>	<i>40-140</i>			
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LCS

Decane (C10)	1.9	0.2	mg/kg wet	2.500		77	40-140			
Docosane (C22)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Dodecane (C12)	2.1	0.2	mg/kg wet	2.500		83	40-140			
Eicosane (C20)	2.4	0.2	mg/kg wet	2.500		96	40-140			
Hexacosane (C26)	2.5	0.2	mg/kg wet	2.500		99	40-140			
Hexadecane (C16)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Hexatriacontane (C36)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Nonadecane (C19)	2.4	0.2	mg/kg wet	2.500		96	40-140			
Nonane (C9)	1.7	0.2	mg/kg wet	2.500		69	30-140			
Octacosane (C28)	2.5	0.2	mg/kg wet	2.500		99	40-140			
Octadecane (C18)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Tetracosane (C24)	2.5	0.2	mg/kg wet	2.500		98	40-140			
Tetradecane (C14)	2.1	0.2	mg/kg wet	2.500		85	40-140			



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8100M Total Petroleum Hydrocarbons

Batch DC02311 - 3546

Total Petroleum Hydrocarbons	32.0	10.0	mg/kg wet	35.00		91	40-140			
Triacontane (C30)	2.4	0.2	mg/kg wet	2.500		97	40-140			

<i>Surrogate: O-Terphenyl</i>	<i>5.00</i>		mg/kg wet	<i>5.000</i>		<i>100</i>	<i>40-140</i>			
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LCS Dup

Decane (C10)	2.0	0.2	mg/kg wet	2.500		82	40-140	6	25	
Docosane (C22)	2.5	0.2	mg/kg wet	2.500		101	40-140	3	25	
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		87	40-140	5	25	
Eicosane (C20)	2.5	0.2	mg/kg wet	2.500		100	40-140	3	25	
Hexacosane (C26)	2.5	0.2	mg/kg wet	2.500		101	40-140	3	25	
Hexadecane (C16)	2.3	0.2	mg/kg wet	2.500		94	40-140	3	25	
Hexatriacontane (C36)	2.5	0.2	mg/kg wet	2.500		100	40-140	3	25	
Nonadecane (C19)	2.5	0.2	mg/kg wet	2.500		100	40-140	4	25	
Nonane (C9)	1.8	0.2	mg/kg wet	2.500		74	30-140	6	25	
Octacosane (C28)	2.6	0.2	mg/kg wet	2.500		103	40-140	4	25	
Octadecane (C18)	2.4	0.2	mg/kg wet	2.500		96	40-140	3	25	
Tetracosane (C24)	2.5	0.2	mg/kg wet	2.500		101	40-140	3	25	
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		89	40-140	4	25	
Total Petroleum Hydrocarbons	33.2	10.0	mg/kg wet	35.00		95	40-140	4	25	
Triacontane (C30)	2.5	0.2	mg/kg wet	2.500		100	40-140	3	25	

<i>Surrogate: O-Terphenyl</i>	<i>5.07</i>		mg/kg wet	<i>5.000</i>		<i>101</i>	<i>40-140</i>			
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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.080	mg/kg wet							
1,4-Dichlorobenzene	ND	0.084	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.082	mg/kg wet							
2,4-Dichlorophenol	ND	0.083	mg/kg wet							
2,4-Dimethylphenol	ND	0.075	mg/kg wet							
2,4-Dinitrophenol	ND	0.557	mg/kg wet							
2,4-Dinitrotoluene	ND	0.107	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.094	mg/kg wet							
2-Methylnaphthalene	ND	0.072	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3'-Dichlorobenzidine	ND	0.167	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							



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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

4-Chloroaniline	ND	0.167	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.167	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.090	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.089	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.051	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.056	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.084	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	0.667	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.081	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.46		mg/kg wet	3.333		74	30-130			
Surrogate: 2,4,6-Tribromophenol	4.47		mg/kg wet	5.000		89	30-130			
Surrogate: 2-Chlorophenol-d4	3.83		mg/kg wet	5.000		77	30-130			
Surrogate: 2-Fluorobiphenyl	2.50		mg/kg wet	3.333		75	30-130			
Surrogate: 2-Fluorophenol	3.66		mg/kg wet	5.000		73	30-130			
Surrogate: Nitrobenzene-d5	2.63		mg/kg wet	3.333		79	30-130			



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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Surrogate: Phenol-d6	3.82		mg/kg wet	5.000		76	30-130			
Surrogate: p-Terphenyl-d14	3.49		mg/kg wet	3.333		105	30-130			

LCS

1,2,4-Trichlorobenzene	2.47	0.333	mg/kg wet	3.333		74	40-140			
1,2-Dichlorobenzene	2.40	0.333	mg/kg wet	3.333		72	40-140			
1,3-Dichlorobenzene	2.39	0.080	mg/kg wet	3.333		72	40-140			
1,4-Dichlorobenzene	2.37	0.084	mg/kg wet	3.333		71	40-140			
2,4,5-Trichlorophenol	3.19	0.333	mg/kg wet	3.333		96	30-130			
2,4,6-Trichlorophenol	3.06	0.082	mg/kg wet	3.333		92	30-130			
2,4-Dichlorophenol	2.78	0.083	mg/kg wet	3.333		84	30-130			
2,4-Dimethylphenol	2.79	0.075	mg/kg wet	3.333		84	30-130			
2,4-Dinitrophenol	4.22	0.557	mg/kg wet	3.333		126	30-130			
2,4-Dinitrotoluene	3.59	0.107	mg/kg wet	3.333		108	40-140			
2,6-Dinitrotoluene	3.08	0.333	mg/kg wet	3.333		92	40-140			
2-Chloronaphthalene	2.53	0.333	mg/kg wet	3.333		76	40-140			
2-Chlorophenol	2.55	0.094	mg/kg wet	3.333		77	30-130			
2-Methylnaphthalene	2.52	0.072	mg/kg wet	3.333		76	40-140			
2-Methylphenol	2.58	0.333	mg/kg wet	3.333		77	30-130			
2-Nitrophenol	2.67	0.333	mg/kg wet	3.333		80	30-130			
3,3'-Dichlorobenzidine	2.71	0.167	mg/kg wet	3.333		81	40-140			
3+4-Methylphenol	5.37	0.667	mg/kg wet	6.667		80	30-130			
4-Bromophenyl-phenylether	3.18	0.333	mg/kg wet	3.333		95	40-140			
4-Chloroaniline	1.46	0.167	mg/kg wet	3.333		44	40-140			
4-Nitrophenol	3.44	1.67	mg/kg wet	3.333		103	30-130			
Acenaphthene	2.70	0.333	mg/kg wet	3.333		81	40-140			
Acenaphthylene	2.48	0.167	mg/kg wet	3.333		75	40-140			
Acetophenone	2.41	0.667	mg/kg wet	3.333		72	40-140			
Aniline	1.74	1.67	mg/kg wet	3.333		52	40-140			
Anthracene	3.17	0.333	mg/kg wet	3.333		95	40-140			
Azobenzene	3.04	0.333	mg/kg wet	3.333		91	40-140			
Benzo(a)anthracene	3.35	0.333	mg/kg wet	3.333		100	40-140			
Benzo(a)pyrene	3.58	0.167	mg/kg wet	3.333		107	40-140			
Benzo(b)fluoranthene	3.89	0.333	mg/kg wet	3.333		117	40-140			
Benzo(g,h,i)perylene	3.45	0.333	mg/kg wet	3.333		104	40-140			
Benzo(k)fluoranthene	2.94	0.333	mg/kg wet	3.333		88	40-140			
bis(2-Chloroethoxy)methane	2.57	0.333	mg/kg wet	3.333		77	40-140			
bis(2-Chloroethyl)ether	2.55	0.090	mg/kg wet	3.333		77	40-140			
bis(2-chloroisopropyl)Ether	2.47	0.089	mg/kg wet	3.333		74	40-140			
bis(2-Ethylhexyl)phthalate	3.62	0.333	mg/kg wet	3.333		109	40-140			
Butylbenzylphthalate	3.60	0.333	mg/kg wet	3.333		108	40-140			
Chrysene	3.32	0.167	mg/kg wet	3.333		100	40-140			
Dibenzo(a,h)Anthracene	3.70	0.051	mg/kg wet	3.333		111	40-140			
Dibenzofuran	2.77	0.333	mg/kg wet	3.333		83	40-140			
Diethylphthalate	3.18	0.333	mg/kg wet	3.333		95	40-140			



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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Dimethylphthalate	3.05	0.333	mg/kg wet	3.333		91	40-140			
Di-n-butylphthalate	3.41	0.333	mg/kg wet	3.333		102	40-140			
Di-n-octylphthalate	3.48	0.333	mg/kg wet	3.333		104	40-140			
Fluoranthene	3.30	0.333	mg/kg wet	3.333		99	40-140			
Fluorene	3.09	0.333	mg/kg wet	3.333		93	40-140			
Hexachlorobenzene	3.15	0.056	mg/kg wet	3.333		95	40-140			
Hexachlorobutadiene	2.62	0.333	mg/kg wet	3.333		79	40-140			
Hexachloroethane	2.41	0.084	mg/kg wet	3.333		72	40-140			
Indeno(1,2,3-cd)Pyrene	3.61	0.333	mg/kg wet	3.333		108	40-140			
Isophorone	2.25	0.333	mg/kg wet	3.333		67	40-140			
Naphthalene	2.47	0.333	mg/kg wet	3.333		74	40-140			
Nitrobenzene	2.54	0.333	mg/kg wet	3.333		76	40-140			
N-Nitrosodimethylamine	2.22	0.333	mg/kg wet	3.333		67	40-140			
Pentachlorophenol	3.76	0.667	mg/kg wet	3.333		113	30-130			
Phenanthrene	3.09	0.333	mg/kg wet	3.333		93	40-140			
Phenol	2.76	0.081	mg/kg wet	3.333		83	30-130			
Pyrene	3.29	0.333	mg/kg wet	3.333		99	40-140			
Pyridine	1.94	1.67	mg/kg wet	3.333		58	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.49		mg/kg wet	3.333		75	30-130			
Surrogate: 2,4,6-Tribromophenol	5.39		mg/kg wet	5.000		108	30-130			
Surrogate: 2-Chlorophenol-d4	3.94		mg/kg wet	5.000		79	30-130			
Surrogate: 2-Fluorobiphenyl	2.67		mg/kg wet	3.333		80	30-130			
Surrogate: 2-Fluorophenol	3.78		mg/kg wet	5.000		76	30-130			
Surrogate: Nitrobenzene-d5	2.71		mg/kg wet	3.333		81	30-130			
Surrogate: Phenol-d6	3.98		mg/kg wet	5.000		80	30-130			
Surrogate: p-Terphenyl-d14	3.51		mg/kg wet	3.333		105	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.26	0.333	mg/kg wet	3.333		68	40-140	9	30	
1,2-Dichlorobenzene	2.14	0.333	mg/kg wet	3.333		64	40-140	11	30	
1,3-Dichlorobenzene	2.12	0.080	mg/kg wet	3.333		64	40-140	12	30	
1,4-Dichlorobenzene	2.12	0.084	mg/kg wet	3.333		64	40-140	11	30	
2,4,5-Trichlorophenol	3.11	0.333	mg/kg wet	3.333		93	30-130	2	30	
2,4,6-Trichlorophenol	3.00	0.082	mg/kg wet	3.333		90	30-130	2	30	
2,4-Dichlorophenol	2.67	0.083	mg/kg wet	3.333		80	30-130	4	30	
2,4-Dimethylphenol	2.69	0.075	mg/kg wet	3.333		81	30-130	4	30	
2,4-Dinitrophenol	4.14	0.557	mg/kg wet	3.333		124	30-130	2	30	
2,4-Dinitrotoluene	3.52	0.107	mg/kg wet	3.333		106	40-140	2	30	
2,6-Dinitrotoluene	3.06	0.333	mg/kg wet	3.333		92	40-140	0.6	30	
2-Chloronaphthalene	2.46	0.333	mg/kg wet	3.333		74	40-140	3	30	
2-Chlorophenol	2.33	0.094	mg/kg wet	3.333		70	30-130	9	30	
2-Methylnaphthalene	2.42	0.072	mg/kg wet	3.333		73	40-140	4	30	
2-Methylphenol	2.41	0.333	mg/kg wet	3.333		72	30-130	7	30	
2-Nitrophenol	2.49	0.333	mg/kg wet	3.333		75	30-130	7	30	
3,3'-Dichlorobenzidine	2.83	0.167	mg/kg wet	3.333		85	40-140	4	30	
3+4-Methylphenol	5.18	0.667	mg/kg wet	6.667		78	30-130	4	30	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch DC01609 - 3546										
4-Bromophenyl-phenylether	3.13	0.333	mg/kg wet	3.333		94	40-140	2	30	
4-Chloroaniline	1.61	0.167	mg/kg wet	3.333		48	40-140	10	30	
4-Nitrophenol	3.37	1.67	mg/kg wet	3.333		101	30-130	2	30	
Acenaphthene	2.66	0.333	mg/kg wet	3.333		80	40-140	1	30	
Acenaphthylene	2.43	0.167	mg/kg wet	3.333		73	40-140	2	30	
Acetophenone	2.26	0.667	mg/kg wet	3.333		68	40-140	6	30	
Aniline	1.68	1.67	mg/kg wet	3.333		50	40-140	4	30	
Anthracene	3.12	0.333	mg/kg wet	3.333		94	40-140	2	30	
Azobenzene	2.98	0.333	mg/kg wet	3.333		89	40-140	2	30	
Benzo(a)anthracene	3.25	0.333	mg/kg wet	3.333		97	40-140	3	30	
Benzo(a)pyrene	3.55	0.167	mg/kg wet	3.333		106	40-140	1	30	
Benzo(b)fluoranthene	3.44	0.333	mg/kg wet	3.333		103	40-140	12	30	
Benzo(g,h,i)perylene	3.40	0.333	mg/kg wet	3.333		102	40-140	2	30	
Benzo(k)fluoranthene	3.34	0.333	mg/kg wet	3.333		100	40-140	13	30	
bis(2-Chloroethoxy)methane	2.44	0.333	mg/kg wet	3.333		73	40-140	5	30	
bis(2-Chloroethyl)ether	2.29	0.090	mg/kg wet	3.333		69	40-140	11	30	
bis(2-chloroisopropyl)Ether	2.23	0.089	mg/kg wet	3.333		67	40-140	10	30	
bis(2-Ethylhexyl)phthalate	3.56	0.333	mg/kg wet	3.333		107	40-140	2	30	
Butylbenzylphthalate	3.51	0.333	mg/kg wet	3.333		105	40-140	3	30	
Chrysene	3.23	0.167	mg/kg wet	3.333		97	40-140	3	30	
Dibenzo(a,h)Anthracene	3.63	0.051	mg/kg wet	3.333		109	40-140	2	30	
Dibenzofuran	2.74	0.333	mg/kg wet	3.333		82	40-140	1	30	
Diethylphthalate	3.16	0.333	mg/kg wet	3.333		95	40-140	0.6	30	
Dimethylphthalate	3.02	0.333	mg/kg wet	3.333		91	40-140	0.9	30	
Di-n-butylphthalate	3.35	0.333	mg/kg wet	3.333		101	40-140	2	30	
Di-n-octylphthalate	3.50	0.333	mg/kg wet	3.333		105	40-140	0.6	30	
Fluoranthene	3.20	0.333	mg/kg wet	3.333		96	40-140	3	30	
Fluorene	3.06	0.333	mg/kg wet	3.333		92	40-140	0.9	30	
Hexachlorobenzene	3.11	0.056	mg/kg wet	3.333		93	40-140	1	30	
Hexachlorobutadiene	2.36	0.333	mg/kg wet	3.333		71	40-140	11	30	
Hexachloroethane	2.14	0.084	mg/kg wet	3.333		64	40-140	12	30	
Indeno(1,2,3-cd)Pyrene	3.56	0.333	mg/kg wet	3.333		107	40-140	1	30	
Isophorone	2.16	0.333	mg/kg wet	3.333		65	40-140	4	30	
Naphthalene	2.30	0.333	mg/kg wet	3.333		69	40-140	7	30	
Nitrobenzene	2.33	0.333	mg/kg wet	3.333		70	40-140	8	30	
N-Nitrosodimethylamine	2.02	0.333	mg/kg wet	3.333		61	40-140	9	30	
Pentachlorophenol	3.67	0.667	mg/kg wet	3.333		110	30-130	2	30	
Phenanthrene	3.04	0.333	mg/kg wet	3.333		91	40-140	2	30	
Phenol	2.55	0.081	mg/kg wet	3.333		77	30-130	8	30	
Pyrene	3.21	0.333	mg/kg wet	3.333		96	40-140	2	30	
Pyridine	1.65	1.67	mg/kg wet	3.333		49	40-140	16	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.22		mg/kg wet	3.333		67	30-130			
Surrogate: 2,4,6-Tribromophenol	5.31		mg/kg wet	5.000		106	30-130			
Surrogate: 2-Chlorophenol-d4	3.61		mg/kg wet	5.000		72	30-130			
Surrogate: 2-Fluorobiphenyl	2.62		mg/kg wet	3.333		79	30-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Surrogate: 2-Fluorophenol	3.44		mg/kg wet	5.000		69	30-130			
Surrogate: Nitrobenzene-d5	2.50		mg/kg wet	3.333		75	30-130			
Surrogate: Phenol-d6	3.71		mg/kg wet	5.000		74	30-130			
Surrogate: p-Terphenyl-d14	3.46		mg/kg wet	3.333		104	30-130			

Classical Chemistry

Batch DC01613 - General Preparation

Blank

Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							

LCS

Reactive Cyanide	3.8	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	ND	2.0	mg/kg	10.00		0	0-44			

Batch DC01620 - General Preparation

Reference

Flashpoint	81		°F	81.00		100	97.9-102.1			
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CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

Notes and Definitions

- Z18 Temperature is not within 23 +/-2 °C.
- Z-10a Soil pH measured in water at 19.6 °C.
- Z-10 Soil pH measured in water at 19.3 °C.
- U Analyte included in the analysis, but not detected
- Q Calibration required quadratic regression (Q).
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- > Greater than.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0466

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 20C0466

Shipped/Delivered Via: ESS Courier

Date Received: 3/13/2020

Project Due Date: 3/20/2020

Days for Project: 5 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? No
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? Yes
Temp: 3.6 Iced with: Ice
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? No
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about short holds & rushes? Yes / No / NA
- 10. Were any analyses received outside of hold time? Yes No

11. Any Subcontracting needed? Yes / No
ESS Sample IDs: _____
Analysis: _____
TAT: _____

12. Were VOAs received? Yes / No
a. Air bubbles in aqueous VOAs? Yes / No
b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
b. Low Level VOA vials frozen: Date: 3/13/20 Time: 7029 By: NA

Sample Receiving Notes:

Lot1-DISP02-grab collection time coc=0850, Label=1130; Lot1-DISP02-Comp collection time coc=1130, label=0850

14. Was there a need to contact Project Manager? Yes / No
a. Was there a need to contact the client? Yes / No
Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	23707	Yes	N/A	Yes	VOA Vial	MeOH	
1	23709	Yes	N/A	Yes	VOA Vial	DI Water	
1	23710	Yes	N/A	Yes	VOA Vial	DI Water	
1	23713	Yes	N/A	Yes	8 oz jar	NP	
1	23714	Yes	N/A	Yes	8 oz jar	NP	
2	23708	Yes	N/A	Yes	VOA Vial	MeOH	
2	23711	Yes	N/A	Yes	VOA Vial	DI Water	
2	23712	Yes	N/A	Yes	VOA Vial	DI Water	
3	23717	Yes	N/A	Yes	8 oz jar	NP	
3	23718	Yes	N/A	Yes	8 oz jar	NP	

2nd Review

Were all containers scanned into storage/lab?

Initials: GA

- Are barcode labels on correct containers?
- Are all Flashpoint stickers attached/container ID # circled?
- Are all Hex Chrome stickers attached?
- Are all QC stickers attached?
- Are VOA stickers attached if bubbles noted?

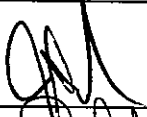
- Yes / No
- Yes / No / NA
- Yes / No / NA
- Yes / No / NA
- Yes / No / NA


ESS Laboratory Sample and Cooler Receipt Checklist


Client: GEI Consultants, Inc. - TB

ESS Project ID: 20C0466

Date Received: 3/13/2020

Completed By:  Date & Time: 3/13/20 2020

Reviewed By:  Date & Time: 3/13/20 2020

Delivered By:  Date & Time: 3/13/20 2020

Chain-of-Custody Record

Laboratory: ESS

Laboratory Job # **20C0466**
(Lab use only)



400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073

Project Information

Project Name: Former Tombarello

Project Location: Lawrence MA

Project Number: 1802441

Project Manager: L. Lombardo
339.221.3551

Send Report to: Elise Farrington

Send EDD to: labdata@geiconsultants.com

Preservative

MeOH	DI H2O	None	None						
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Analysis

VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals*, Ignitability, Corrosivity, RCN/S	PCBs*	TPH (8100M) <small>L Lombardo 3/24/2020</small>					
x	x	x	x	x					
x	x								
		x	x	x					

Page 1 of 8

Sample Handling

Samples Field Filtered

YES NO **NA**

Sampled Shipped With Ice

YES NO

MCP PRESUMPTIVE CERTAINTY REQUIRED: **YES** NO

If Yes, Are MCP Analytical Methods Required? **YES** NO NA

If Yes, Are Drinking Water Samples Submitted? YES **NO** NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO **NA**

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals*, Ignitability, Corrosivity, RCN/S	PCBs*	TPH (8100M) <small>L Lombardo 3/24/2020</small>						Sample Specific Remarks
		Date	Time														
1	1802441-Lot1-DISP01	3/12/2020	8:40	SO	5	BRL	x	x	x	x	x						
2	1802441-Lot1-DISP02-Grab	3/12/2020	8:50	SO	3	BRL	x	x									
3	1802441-Lot1-DISP02-Comp	3/12/2020	11:30	SO	2	BRL			x	x	x						

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):

Normal ___ Other ___
10-Day ___ 7-Day ___
5-Day **X** 3-Day ___

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

* Manual Soxhlet Extraction for PCBs. Analysis must be performed in accordance with GEI's Site Specific QAPP.

**Run TCLP if 20x Rule Exceeded

Relinquished by: (signature) 1. <i>[Signature]</i>	Date: 3/13/20	Time: 1400	Received by: (signature) <i>[Signature]</i>
Relinquished by: (signature) 2. <i>[Signature]</i>	Date: 3/13/20	Time: 1904	Received by: (signature) 2. <i>[Signature]</i> 3/13/20
Relinquished by: (signature) 3.	Date:	Time:	Received by: (signature) 3.
Relinquished by: (signature) 4.	Date:	Time:	Received by: (signature) 4.

Chain-of-Custody Record

Laboratory: ESS

Laboratory Job # **20C04506**
(Lab use only)

Project Information

Page 1 of 8



400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073

Project Name: Former Tombarello

Project Location: Lawrence MA

Project Number: 1802441

Project Manager: L. Lombardo
339.221.3551

Send Report to: Elise Farrington

Send EDD to: labdata@geiconsultants.com

Preservative

MeOH DI H2O None None

Analysis

VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals** Ignitability, Corrosivity, RCN/S	PCBs*							
x	x	x	x							
x	x									
		x	x							

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

MCP PRESUMPTIVE CERTAINTY REQUIRED:

YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

If Yes, Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals** Ignitability, Corrosivity, RCN/S	PCBs*										Sample Specific Remarks		
		Date	Time																			
1	1802441-Lot1-DISP01	3/12/2020	8:40	SO	5	BRL	x	x	x	x												
2	1802441-Lot1-DISP02-Grab	3/12/2020	8:50	SO	3	BRL	x	x														
3	1802441-Lot1-DISP02-Comp	3/12/2020	11:30	SO	2	BRL			x	x												

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):

Normal Other
 10-Day 7-Day
 5-Day 3-Day

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

1. Relinquished by: (signature) <i>[Signature]</i>	Date: 3/13/20	Time: 1400	Received by: (signature) <i>[Signature]</i>
2. Relinquished by: (signature) <i>[Signature]</i>	Date: 3/13/20	Time: 1904	Received by: (signature) <i>[Signature]</i> 3/13/20
3. Relinquished by: (signature)	Date:	Time:	Received by: (signature)
4. Relinquished by: (signature)	Date:	Time:	Received by: (signature)

Additional Requirements/Comments/Remarks:

* Manual Soxhlet Extraction for PCBs. Analysis must be performed in accordance with GEI's Site Specific QAPP.
 **Run TCLP if 20x Rule Exceeded



CERTIFICATE OF ANALYSIS

Leslie Lombardo
 GEI Consultants, Inc.
 400 Unicorn Park Drive
 Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 20C0467

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
 Laboratory Director

REVIEWED

By ESS Laboratory at 1:56 pm, Apr 17, 2020

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

SAMPLE RECEIPT

The following samples were received on March 13, 2020 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on March 13, 2020 at 2035.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 April 17, 2020: This report has been revised to include Pyridine to all samples per the client's request.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
20C0467-01	1802441-Lot2-DISP05	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B, 8260B Low, 8270D, 9045
20C0467-02	1802441-Lot2-DISP06	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B Low, 8270D, 9045
20C0467-03	1802441-Lot2-DISP04	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B Low, 8270D, 9045
20C0467-04	1802441-Lot2-DISP03	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B Low, 8270D, 9045



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

- 20C0467-01 Reported above the quantitation limit; Estimated value (E).
Naphthalene
- D0C0330-CCV1 Continuing Calibration %Diff/Drift is below control limit (CD-).
Acetone (21% @ 20%), Chloroethane (21% @ 20%), Chloromethane (22% @ 20%), Tetrahydrofuran (22% @ 20%), Vinyl Chloride (22% @ 20%)
- D0C0358-CCV1 Continuing Calibration %Diff/Drift is above control limit (CD+).
Bromomethane (22% @ 20%)
- DC01838-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
Acetone (21% @ 20%), Bromomethane (21% @ 20%)

8082A Polychlorinated Biphenyls (PCB)

- 20C0467-02 Surrogate recovery(ies) diluted below the MRL (SD).
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)
- 20C0467-03 Surrogate recovery(ies) diluted below the MRL (SD).
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)
- 20C0467-04 Surrogate recovery(ies) diluted below the MRL (SD).
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

8270D Semi-Volatile Organic Compounds

- 20C0467-01 Elevated Method Reporting Limits due to sample matrix (EL).
- 20C0467-02 Elevated Method Reporting Limits due to sample matrix (EL).
- 20C0467-03 Elevated Method Reporting Limits due to sample matrix (EL).
- 20C0467-04 Elevated Method Reporting Limits due to sample matrix (EL).
- D0C0312-CCV1 Calibration required quadratic regression (Q).
2,4-Dinitrophenol (120% @ 80-120%), Pentachlorophenol (116% @ 80-120%)
- D0C0313-CCV1 Calibration required quadratic regression (Q).
2,4-Dinitrophenol (129% @ 80-120%), Pentachlorophenol (109% @ 80-120%)
- D0C0313-CCV1 Continuing Calibration %Diff/Drift is above control limit (CD+).
2,4-Dinitrophenol (29% @ 20%)

Total Metals

- 20C0467-03 Elevated Method Reporting Limits due to sample matrix (EL).
Silver

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **20C0467-01 through 20C0467-04**

Matrices: () Ground Water/Surface Water Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|--|---|---|---|---|------------------------------------|
| <input checked="" type="checkbox"/> 8260 VOC
CAM II A | <input checked="" type="checkbox"/> 7470/7471 Hg
CAM III B | () MassDEP VPH
(GC/PID/FID)
CAM IV A | <input checked="" type="checkbox"/> 8082 PCB
CAM V A | () 9014 Total
Cyanide/PAC
CAM VI A | () 6860 Perchlorate
CAM VIII B |
| <input checked="" type="checkbox"/> 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 |
| <input checked="" type="checkbox"/> 6010 Metals
CAM III A | () 6020 Metals
CAM III D | () MassDEP EPH
CAM IV B | () 8151 Herbicides
CAM V C | () 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 the 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. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes () No ()
- b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? 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 protocols(s)? Yes () No *
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 *
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes () No *

****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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: March 20, 2020
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	7.15 (2.14)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Barium	88.6 (2.14)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Cadmium	1.24 (0.43)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Chromium	34.4 (0.85)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Lead	260 (4.27)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Mercury	0.376 (0.026)		7471B		1	MKS	03/17/20 8:37	0.83	40	DC01643
Selenium	ND (4.27)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642
Silver	ND (0.43)		6010C		1	KJK	03/17/20 21:17	2.56	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	2.78 (0.050)		1311/6010C		1	KJK	03/19/20 21:28	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1,1-Trichloroethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1,2,2-Tetrachloroethane	ND (0.0020)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1,2-Trichloroethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1-Dichloroethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1-Dichloroethene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,1-Dichloropropene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2,3-Trichlorobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2,3-Trichloropropane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2,4-Trichlorobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2,4-Trimethylbenzene	0.0068 (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2-Dibromo-3-Chloropropane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2-Dibromoethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2-Dichlorobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2-Dichloroethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,2-Dichloropropane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,3,5-Trimethylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,3-Dichlorobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,3-Dichloropropane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,4-Dichlorobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
1,4-Dioxane	ND (0.101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
2,2-Dichloropropane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
2-Butanone	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
2-Chlorotoluene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
2-Hexanone	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
4-Chlorotoluene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
4-Isopropyltoluene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
4-Methyl-2-Pentanone	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Acetone	0.0360 (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Benzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Bromobenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Bromochloromethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Bromoform	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Bromomethane	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Carbon Disulfide	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Carbon Tetrachloride	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Chlorobenzene	0.0783 (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Chloroethane	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Chloroform	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Chloromethane	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
cis-1,2-Dichloroethene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
cis-1,3-Dichloropropene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Dibromochloromethane	ND (0.0020)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Dibromomethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Dichlorodifluoromethane	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Diethyl Ether	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Di-isopropyl ether	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Ethyl tertiary-butyl ether	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Ethylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Hexachlorobutadiene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Isopropylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Methyl tert-Butyl Ether	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Methylene Chloride	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Naphthalene	E 0.455 (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
n-Butylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
n-Propylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
sec-Butylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Styrene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
tert-Butylbenzene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Tertiary-amyl methyl ether	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Tetrachloroethene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Tetrahydrofuran	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Toluene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
trans-1,3-Dichloropropene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Trichloroethene	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Trichlorofluoromethane	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Vinyl Chloride	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Xylene O	ND (0.0051)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Xylene P,M	ND (0.0101)		8260B Low		1	03/18/20 22:48	D0C0330	DC01838
Xylenes (Total)	ND (0.0101)		8260B Low		1	03/18/20 22:48		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>90 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>79 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>96 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>107 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 8.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1,1-Trichloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1,2,2-Tetrachloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1,2-Trichloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1-Dichloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1-Dichloroethene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,1-Dichloropropene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2,3-Trichlorobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2,3-Trichloropropane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2,4-Trichlorobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2,4-Trimethylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2-Dibromo-3-Chloropropane	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2-Dibromoethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2-Dichlorobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2-Dichloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,2-Dichloropropane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,3,5-Trimethylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,3-Dichlorobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,3-Dichloropropane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,4-Dichlorobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
1,4-Dioxane - Screen	ND (83.7)		8260B		1	03/20/20 13:24	D0C0376	DC02018
2,2-Dichloropropane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
2-Butanone	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
2-Chlorotoluene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
2-Hexanone	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
4-Chlorotoluene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
4-Isopropyltoluene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
4-Methyl-2-Pentanone	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Acetone	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Benzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Bromobenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Bromochloromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 8.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Bromoform	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Bromomethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Carbon Disulfide	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Carbon Tetrachloride	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Chlorobenzene	3.34 (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Chloroethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Chloroform	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Chloromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
cis-1,2-Dichloroethene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
cis-1,3-Dichloropropene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Dibromochloromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Dibromomethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Dichlorodifluoromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Diethyl Ether	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Di-isopropyl ether	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Ethyl tertiary-butyl ether	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Ethylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Hexachlorobutadiene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Isopropylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Methyl tert-Butyl Ether	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Methylene Chloride	ND (0.837)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Naphthalene	53.6 (4.19)		8260B		10	03/20/20 14:44	D0C0376	DC02018
n-Butylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
n-Propylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
sec-Butylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Styrene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
tert-Butylbenzene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Tertiary-amyl methyl ether	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Tetrachloroethene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Tetrahydrofuran	ND (2.09)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Toluene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
 Client Project ID: Tombarello Site Investigation
 Client Sample ID: 1802441-Lot2-DISP05
 Date Sampled: 03/12/20 09:40
 Percent Solids: 91
 Initial Volume: 8.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
 ESS Laboratory Sample ID: 20C0467-01
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
trans-1,3-Dichloropropene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Trichloroethene	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Trichlorofluoromethane	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Vinyl Chloride	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Xylene O	ND (0.419)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Xylene P,M	ND (0.837)		8260B		1	03/20/20 13:24	D0C0376	DC02018
Xylenes (Total)	ND (0.837)		8260B		1	03/20/20 13:24		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>115 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>109 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 19.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1221	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1232	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1242	0.4 (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1248	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1254	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1260	9.0 (0.6)		8082A		10	03/20/20 2:27		DC01930
Aroclor 1262	ND (0.06)		8082A		1	03/19/20 13:22		DC01930
Aroclor 1268	ND (0.06)		8082A		1	03/19/20 13:22		DC01930

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	66 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	74 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	33 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	41 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
1,2-Dichlorobenzene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
1,3-Dichlorobenzene	ND (0.362)		8270D		2	03/19/20 3:46	D0C0313	DC01609
1,4-Dichlorobenzene	ND (0.380)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4,5-Trichlorophenol	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4,6-Trichlorophenol	ND (0.371)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4-Dichlorophenol	ND (0.375)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4-Dimethylphenol	ND (0.339)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4-Dinitrophenol	ND (2.52)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,4-Dinitrotoluene	ND (0.484)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2,6-Dinitrotoluene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2-Chloronaphthalene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2-Chlorophenol	ND (0.425)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2-Methylnaphthalene	0.961 (0.326)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2-Methylphenol	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
2-Nitrophenol	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
3,3'-Dichlorobenzidine	ND (0.755)		8270D		2	03/19/20 3:46	D0C0313	DC01609
3+4-Methylphenol	ND (3.02)		8270D		2	03/19/20 3:46	D0C0313	DC01609
4-Bromophenyl-phenylether	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
4-Chloroaniline	ND (0.755)		8270D		2	03/19/20 3:46	D0C0313	DC01609
4-Nitrophenol	ND (7.55)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Acenaphthene	9.68 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Acenaphthylene	ND (0.755)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Acetophenone	ND (3.02)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Aniline	ND (7.55)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Anthracene	22.3 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Azobenzene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Benzo(a)anthracene	43.9 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Benzo(a)pyrene	42.0 (7.55)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Benzo(b)fluoranthene	40.4 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Benzo(g,h,i)perylene	23.7 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Benzo(k)fluoranthene	24.2 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
bis(2-Chloroethyl)ether	ND (0.407)		8270D		2	03/19/20 3:46	D0C0313	DC01609
bis(2-chloroisopropyl)Ether	ND (0.403)		8270D		2	03/19/20 3:46	D0C0313	DC01609
bis(2-Ethylhexyl)phthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Butylbenzylphthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Chrysene	43.9 (7.55)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Dibenzo(a,h)Anthracene	11.3 (0.755)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Dibenzofuran	9.79 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Diethylphthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Dimethylphthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Di-n-butylphthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Di-n-octylphthalate	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Fluoranthene	117 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Fluorene	16.2 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Hexachlorobenzene	ND (0.253)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Hexachlorobutadiene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Hexachloroethane	ND (0.380)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Indeno(1,2,3-cd)Pyrene	22.5 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Isophorone	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Naphthalene	4.05 (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Nitrobenzene	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
N-Nitrosodimethylamine	ND (1.51)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Pentachlorophenol	ND (3.02)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Phenanthrene	106 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Phenol	ND (0.366)		8270D		2	03/19/20 3:46	D0C0313	DC01609
Pyrene	86.0 (15.1)		8270D		20	03/19/20 18:38	D0C0313	DC01609
Pyridine	ND (7.55)		8270D		2	03/19/20 3:46	D0C0313	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	64 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	90 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	72 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		72 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		62 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		63 %		30-130				
<i>Surrogate: Phenol-d6</i>		72 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		98 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.05 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.4 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01631
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/16/20 10:58	mg/kg	DC01613
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/16/20 10:58	mg/kg	DC01613



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP05
Date Sampled: 03/12/20 09:40
Percent Solids: 91
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-01
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	13.4 (2.60)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Barium	236 (2.60)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Cadmium	7.41 (0.52)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Chromium	53.3 (1.04)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Lead	1200 (5.21)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Mercury	3.05 (0.750)		7471B		25	MKS	03/17/20 9:00	0.77	40	DC01643
Selenium	ND (5.21)		6010C		1	KJK	03/17/20 21:21	2.24	100	DC01642
Silver	ND (1.04)		6010C		2	KJK	03/18/20 9:14	2.24	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	14.0 (0.050)		1311/6010C		1	KJK	03/19/20 21:32	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1,1-Trichloroethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1,2,2-Tetrachloroethane	ND (0.0014)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1,2-Trichloroethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1-Dichloroethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1-Dichloroethene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,1-Dichloropropene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2,3-Trichlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2,3-Trichloropropane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2,4-Trichlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2,4-Trimethylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2-Dibromo-3-Chloropropane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2-Dibromoethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2-Dichloroethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,2-Dichloropropane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,3,5-Trimethylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,3-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,3-Dichloropropane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,4-Dichlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
1,4-Dioxane	ND (0.0678)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
2,2-Dichloropropane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
2-Butanone	0.0108 (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
2-Chlorotoluene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
2-Hexanone	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
4-Chlorotoluene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
4-Isopropyltoluene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
4-Methyl-2-Pentanone	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Acetone	0.117 (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Benzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Bromobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Bromochloromethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Bromoform	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Bromomethane	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Carbon Disulfide	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Carbon Tetrachloride	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Chlorobenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Chloroethane	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Chloroform	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Chloromethane	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
cis-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
cis-1,3-Dichloropropene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Dibromochloromethane	ND (0.0014)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Dibromomethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Dichlorodifluoromethane	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Diethyl Ether	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Di-isopropyl ether	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Ethyl tertiary-butyl ether	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Ethylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Hexachlorobutadiene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Isopropylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Methyl tert-Butyl Ether	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Methylene Chloride	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Naphthalene	0.0054 (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
n-Butylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
n-Propylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
sec-Butylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Styrene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
tert-Butylbenzene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Tertiary-amyl methyl ether	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Tetrachloroethene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Tetrahydrofuran	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Toluene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
trans-1,3-Dichloropropene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Trichloroethene	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Trichlorofluoromethane	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Vinyl Chloride	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Xylene O	ND (0.0034)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Xylene P,M	ND (0.0068)		8260B Low		1	03/19/20 21:39	D0C0358	DC01938
Xylenes (Total)	ND (0.00678)		8260B Low		1	03/19/20 21:39		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>124 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>95 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>113 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>100 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 19.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1221	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1232	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1242	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1248	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1254 [2C]	21.3 (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1260	7.7 (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1262	ND (1.2)		8082A		20	03/19/20 14:01		DC01930
Aroclor 1268	ND (1.2)		8082A		20	03/19/20 14:01		DC01930

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	%	SD	30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	%	SD	30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 14.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
1,2-Dichlorobenzene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
1,3-Dichlorobenzene	ND (0.397)		8270D		2	03/18/20 23:27	D0C0312	DC01609
1,4-Dichlorobenzene	ND (0.417)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4,5-Trichlorophenol	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4,6-Trichlorophenol	ND (0.407)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4-Dichlorophenol	ND (0.412)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4-Dimethylphenol	ND (0.372)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4-Dinitrophenol	ND (2.76)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,4-Dinitrotoluene	ND (0.531)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2,6-Dinitrotoluene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2-Chloronaphthalene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2-Chlorophenol	ND (0.467)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2-Methylnaphthalene	0.774 (0.357)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2-Methylphenol	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
2-Nitrophenol	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
3,3'-Dichlorobenzidine	ND (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
3+4-Methylphenol	ND (3.31)		8270D		2	03/18/20 23:27	D0C0312	DC01609
4-Bromophenyl-phenylether	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
4-Chloroaniline	ND (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
4-Nitrophenol	ND (8.29)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Acenaphthene	2.20 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Acenaphthylene	ND (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Acetophenone	ND (3.31)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Aniline	ND (8.29)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Anthracene	5.84 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Azobenzene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Benzo(a)anthracene	9.56 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Benzo(a)pyrene	8.92 (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Benzo(b)fluoranthene	7.26 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Benzo(g,h,i)perylene	4.77 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Benzo(k)fluoranthene	6.81 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 14.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
bis(2-Chloroethyl)ether	ND (0.447)		8270D		2	03/18/20 23:27	D0C0312	DC01609
bis(2-chloroisopropyl)Ether	ND (0.442)		8270D		2	03/18/20 23:27	D0C0312	DC01609
bis(2-Ethylhexyl)phthalate	2.14 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Butylbenzylphthalate	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Chrysene	9.00 (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Dibenzo(a,h)Anthracene	1.65 (0.829)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Dibenzofuran	1.72 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Diethylphthalate	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Dimethylphthalate	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Di-n-butylphthalate	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Di-n-octylphthalate	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Fluoranthene	21.7 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Fluorene	3.04 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Hexachlorobenzene	ND (0.278)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Hexachlorobutadiene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Hexachloroethane	ND (0.417)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Indeno(1,2,3-cd)Pyrene	4.64 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Isophorone	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Naphthalene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Nitrobenzene	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
N-Nitrosodimethylamine	ND (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Pentachlorophenol	ND (3.31)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Phenanthrene	18.7 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Phenol	ND (0.402)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Pyrene	20.1 (1.65)		8270D		2	03/18/20 23:27	D0C0312	DC01609
Pyridine	ND (8.29)		8270D		2	03/18/20 23:27	D0C0312	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>52 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>65 %</i>		<i>30-130</i>
<i>Surrogate: 2-Chlorophenol-d4</i>	<i>55 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 14.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		67 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		53 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		52 %		30-130				
<i>Surrogate: Phenol-d6</i>		55 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		77 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.93 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.2 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01631
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/16/20 10:58	mg/kg	DC01613
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/16/20 10:58	mg/kg	DC01613



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP06
Date Sampled: 03/12/20 10:30
Percent Solids: 86
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-02
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	10.1 (2.26)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Barium	153 (2.26)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Cadmium	1.17 (0.45)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Chromium	30.0 (0.90)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Lead	446 (4.52)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Mercury	0.419 (0.025)		7471B		1	MKS	03/17/20 8:41	0.85	40	DC01643
Selenium	ND (4.52)		6010C		1	KJK	03/17/20 21:45	2.38	100	DC01642
Silver	EL ND (4.52)		6010C		10	KJK	03/18/20 13:32	2.38	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.626 (0.050)		1311/6010C		1	KJK	03/19/20 21:37	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1,1-Trichloroethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1,2,2-Tetrachloroethane	ND (0.0013)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1,2-Trichloroethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1-Dichloroethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1-Dichloroethene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,1-Dichloropropene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2,3-Trichlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2,3-Trichloropropane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2,4-Trichlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2,4-Trimethylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2-Dibromo-3-Chloropropane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2-Dibromoethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2-Dichlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2-Dichloroethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,2-Dichloropropane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,3,5-Trimethylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,3-Dichlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,3-Dichloropropane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,4-Dichlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
1,4-Dioxane	ND (0.0625)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
2,2-Dichloropropane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
2-Butanone	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
2-Chlorotoluene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
2-Hexanone	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
4-Chlorotoluene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
4-Isopropyltoluene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
4-Methyl-2-Pentanone	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Acetone	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Benzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Bromobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Bromochloromethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Bromoform	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Bromomethane	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Carbon Disulfide	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Carbon Tetrachloride	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Chlorobenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Chloroethane	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Chloroform	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Chloromethane	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
cis-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
cis-1,3-Dichloropropene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Dibromochloromethane	ND (0.0013)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Dibromomethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Dichlorodifluoromethane	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Diethyl Ether	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Di-isopropyl ether	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Ethyl tertiary-butyl ether	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Ethylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Hexachlorobutadiene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Isopropylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Methyl tert-Butyl Ether	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Methylene Chloride	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Naphthalene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
n-Butylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
n-Propylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
sec-Butylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Styrene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
tert-Butylbenzene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Tertiary-amyl methyl ether	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Tetrachloroethene	0.0048 (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Tetrahydrofuran	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Toluene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
trans-1,3-Dichloropropene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Trichloroethene	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Trichlorofluoromethane	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Vinyl Chloride	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Xylene O	ND (0.0031)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Xylene P,M	ND (0.0063)		8260B Low		1	03/18/20 22:22	D0C0330	DC01838
Xylenes (Total)	ND (0.00625)		8260B Low		1	03/18/20 22:22		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	85 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	75 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	93 %		70-130
<i>Surrogate: Toluene-d8</i>	118 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 19.2
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1221	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1232	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1242	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1248	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1254	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1260	48.7 (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1262	ND (5.6)		8082A		100	03/19/20 14:20		DC01701
Aroclor 1268	ND (5.6)		8082A		100	03/19/20 14:20		DC01701

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	%	SD	30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	%	SD	30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
1,2-Dichlorobenzene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
1,3-Dichlorobenzene	ND (0.165)		8270D		2	03/18/20 23:56	D0C0312	DC01609
1,4-Dichlorobenzene	ND (0.174)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4,5-Trichlorophenol	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4,6-Trichlorophenol	ND (0.170)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4-Dichlorophenol	ND (0.172)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4-Dimethylphenol	ND (0.155)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4-Dinitrophenol	ND (1.15)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,4-Dinitrotoluene	ND (0.221)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2,6-Dinitrotoluene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2-Chloronaphthalene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2-Chlorophenol	ND (0.194)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2-Methylnaphthalene	ND (0.149)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2-Methylphenol	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
2-Nitrophenol	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
3,3'-Dichlorobenzidine	ND (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
3+4-Methylphenol	ND (1.38)		8270D		2	03/18/20 23:56	D0C0312	DC01609
4-Bromophenyl-phenylether	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
4-Chloroaniline	ND (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
4-Nitrophenol	ND (3.45)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Acenaphthene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Acenaphthylene	ND (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Acetophenone	ND (1.38)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Aniline	ND (3.45)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Anthracene	0.857 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Azobenzene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Benzo(a)anthracene	3.14 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Benzo(a)pyrene	3.69 (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Benzo(b)fluoranthene	3.33 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Benzo(g,h,i)perylene	2.65 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Benzo(k)fluoranthene	2.67 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
bis(2-Chloroethyl)ether	ND (0.186)		8270D		2	03/18/20 23:56	D0C0312	DC01609
bis(2-chloroisopropyl)Ether	ND (0.184)		8270D		2	03/18/20 23:56	D0C0312	DC01609
bis(2-Ethylhexyl)phthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Butylbenzylphthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Chrysene	3.09 (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Dibenzo(a,h)Anthracene	0.848 (0.345)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Dibenzofuran	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Diethylphthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Dimethylphthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Di-n-butylphthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Di-n-octylphthalate	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Fluoranthene	5.37 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Fluorene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Hexachlorobenzene	ND (0.116)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Hexachlorobutadiene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Hexachloroethane	ND (0.174)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Indeno(1,2,3-cd)Pyrene	2.35 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Isophorone	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Naphthalene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Nitrobenzene	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
N-Nitrosodimethylamine	ND (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Pentachlorophenol	ND (1.38)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Phenanthrene	3.40 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Phenol	ND (0.167)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Pyrene	5.17 (0.688)		8270D		2	03/18/20 23:56	D0C0312	DC01609
Pyridine	ND (3.45)		8270D		2	03/18/20 23:56	D0C0312	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>55 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>68 %</i>		<i>30-130</i>
<i>Surrogate: 2-Chlorophenol-d4</i>	<i>63 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		68 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		62 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		59 %		30-130				
<i>Surrogate: Phenol-d6</i>		65 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		80 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.91 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.4 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01631
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/16/20 10:58	mg/kg	DC01613
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/16/20 10:58	mg/kg	DC01613



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP04
Date Sampled: 03/12/20 12:15
Percent Solids: 93
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-03
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	11.1 (2.65)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Barium	457 (2.65)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Cadmium	63.7 (0.53)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Chromium	49.2 (1.06)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Lead	1330 (5.31)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Mercury	0.746 (0.038)		7471B		1	MKS	03/17/20 8:43	0.7	40	DC01643
Selenium	ND (5.31)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642
Silver	3.12 (0.53)		6010C		1	KJK	03/17/20 21:50	2.56	100	DC01642



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Cadmium	0.353 (0.0100)		1311/6010C		1	KJK	03/19/20 21:53	50	50	DC01937
Lead	0.746 (0.050)		1311/6010C		1	KJK	03/19/20 21:53	50	50	DC01937



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 9.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1,1-Trichloroethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1,2,2-Tetrachloroethane	ND (0.0015)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1,2-Trichloroethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1-Dichloroethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1-Dichloroethene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,1-Dichloropropene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2,3-Trichlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2,3-Trichloropropane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2,4-Trichlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2,4-Trimethylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2-Dibromo-3-Chloropropane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2-Dibromoethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2-Dichlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2-Dichloroethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,2-Dichloropropane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,3,5-Trimethylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,3-Dichlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,3-Dichloropropane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,4-Dichlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
1,4-Dioxane	ND (0.0738)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
2,2-Dichloropropane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
2-Butanone	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
2-Chlorotoluene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
2-Hexanone	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
4-Chlorotoluene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
4-Isopropyltoluene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
4-Methyl-2-Pentanone	0.0248 (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Acetone	0.0389 (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Benzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Bromobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Bromochloromethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 9.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Bromoform	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Bromomethane	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Carbon Disulfide	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Carbon Tetrachloride	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Chlorobenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Chloroethane	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Chloroform	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Chloromethane	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
cis-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
cis-1,3-Dichloropropene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Dibromochloromethane	ND (0.0015)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Dibromomethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Dichlorodifluoromethane	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Diethyl Ether	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Di-isopropyl ether	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Ethyl tertiary-butyl ether	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Ethylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Hexachlorobutadiene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Isopropylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Methyl tert-Butyl Ether	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Methylene Chloride	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Naphthalene	0.0701 (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
n-Butylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
n-Propylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
sec-Butylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Styrene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
tert-Butylbenzene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Tertiary-amyl methyl ether	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Tetrachloroethene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Tetrahydrofuran	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Toluene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 9.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
trans-1,3-Dichloropropene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Trichloroethene	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Trichlorofluoromethane	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Vinyl Chloride	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Xylene O	ND (0.0037)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Xylene P,M	ND (0.0074)		8260B Low		1	03/19/20 22:56	D0C0358	DC01938
Xylenes (Total)	ND (0.00738)		8260B Low		1	03/19/20 22:56		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>112 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>97 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>97 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 20
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1221	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1232	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1242	5.3 (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1248	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1254	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1260	31.0 (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1262	ND (2.7)		8082A		40	03/20/20 9:16		DC01930
Aroclor 1268	ND (2.7)		8082A		40	03/20/20 9:16		DC01930

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	%	SD	30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	%	SD	30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
1,2-Dichlorobenzene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
1,3-Dichlorobenzene	ND (0.219)		8270D		2	03/19/20 0:25	D0C0312	DC01609
1,4-Dichlorobenzene	ND (0.230)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4,5-Trichlorophenol	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4,6-Trichlorophenol	ND (0.224)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4-Dichlorophenol	ND (0.227)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4-Dimethylphenol	ND (0.205)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4-Dinitrophenol	ND (1.52)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,4-Dinitrotoluene	ND (0.293)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2,6-Dinitrotoluene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2-Chloronaphthalene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2-Chlorophenol	ND (0.257)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2-Methylnaphthalene	1.37 (0.197)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2-Methylphenol	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
2-Nitrophenol	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
3,3'-Dichlorobenzidine	ND (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
3+4-Methylphenol	ND (1.82)		8270D		2	03/19/20 0:25	D0C0312	DC01609
4-Bromophenyl-phenylether	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
4-Chloroaniline	ND (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
4-Nitrophenol	ND (4.57)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Acenaphthene	5.98 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Acenaphthylene	ND (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Acetophenone	ND (1.82)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Aniline	ND (4.57)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Anthracene	10.9 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Azobenzene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Benzo(a)anthracene	19.1 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Benzo(a)pyrene	18.2 (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Benzo(b)fluoranthene	17.3 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Benzo(g,h,i)perylene	8.86 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Benzo(k)fluoranthene	11.4 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
bis(2-Chloroethyl)ether	ND (0.246)		8270D		2	03/19/20 0:25	D0C0312	DC01609
bis(2-chloroisopropyl)Ether	ND (0.243)		8270D		2	03/19/20 0:25	D0C0312	DC01609
bis(2-Ethylhexyl)phthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Butylbenzylphthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Chrysene	17.5 (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Dibenzo(a,h)Anthracene	3.51 (0.457)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Dibenzofuran	3.52 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Diethylphthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Dimethylphthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Di-n-butylphthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Di-n-octylphthalate	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Fluoranthene	43.0 (9.11)		8270D		20	03/19/20 19:04	D0C0312	DC01609
Fluorene	5.82 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Hexachlorobenzene	ND (0.153)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Hexachlorobutadiene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Hexachloroethane	ND (0.230)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Indeno(1,2,3-cd)Pyrene	8.90 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Isophorone	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Naphthalene	3.71 (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Nitrobenzene	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
N-Nitrosodimethylamine	ND (0.911)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Pentachlorophenol	ND (1.82)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Phenanthrene	38.3 (9.11)		8270D		20	03/19/20 19:04	D0C0312	DC01609
Phenol	1.28 (0.222)		8270D		2	03/19/20 0:25	D0C0312	DC01609
Pyrene	32.5 (9.11)		8270D		20	03/19/20 19:04	D0C0312	DC01609
Pyridine	ND (4.57)		8270D		2	03/19/20 0:25	D0C0312	DC01609

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	41 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	54 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	45 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:40

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		53 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		44 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		46 %		30-130				
<i>Surrogate: Phenol-d6</i>		47 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		64 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.61 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01326
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.2 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01631
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/18/20 11:11	mg/kg	DC01819
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/18/20 11:11	mg/kg	DC01819



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP03
Date Sampled: 03/12/20 14:10
Percent Solids: 74
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0467
ESS Laboratory Sample ID: 20C0467-04
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/18/20 20:15

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Max C)	21.4 (N/A)		1311		1	MKS	03/19/20 12:20	DC01824
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch DC01642 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet
Barium	ND	2.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.00	mg/kg wet
Lead	ND	5.00	mg/kg wet
Selenium	ND	5.00	mg/kg wet
Silver	ND	0.50	mg/kg wet

LCS

Arsenic	187	7.69	mg/kg wet	202.0	93	80-120
Barium	320	7.69	mg/kg wet	343.0	93	80-120
Cadmium	128	1.54	mg/kg wet	149.0	86	80-120
Chromium	170	3.08	mg/kg wet	182.0	94	80-120
Lead	318	15.4	mg/kg wet	333.0	95	80-120
Selenium	158	15.4	mg/kg wet	169.0	93	80-120
Silver	45.2	1.54	mg/kg wet	48.90	92	80-120

LCS Dup

Arsenic	194	8.20	mg/kg wet	202.0	96	80-120	4	20
Barium	341	8.20	mg/kg wet	343.0	100	80-120	7	20
Cadmium	135	1.64	mg/kg wet	149.0	91	80-120	6	20
Chromium	176	3.28	mg/kg wet	182.0	97	80-120	3	20
Lead	333	16.4	mg/kg wet	333.0	100	80-120	5	20
Selenium	162	16.4	mg/kg wet	169.0	96	80-120	2	20
Silver	45.2	1.64	mg/kg wet	48.90	92	80-120	0.1	20

Batch DC01643 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet
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LCS

Mercury	9.60	0.550	mg/kg wet	7.760	124	71-125
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LCS Dup

Mercury	9.15	0.574	mg/kg wet	7.760	118	71-125	5	20
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1311 TCLP Metals

Batch DC01937 - 3005A_TCLP

Blank

Cadmium	ND	0.0100	mg/L
Lead	ND	0.050	mg/L

LCS

Cadmium	0.241	0.0100	mg/L	0.2500	97	80-120
Lead	0.469	0.050	mg/L	0.5000	94	80-120

LCS Dup

Cadmium	0.242	0.0100	mg/L	0.2500	97	80-120	0.07	20
Lead	0.472	0.050	mg/L	0.5000	94	80-120	0.7	20



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	0.0292	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: 4-Bromofluorobenzene	0.0448		mg/kg wet	0.05000		90	70-130			
Surrogate: Dibromofluoromethane	0.0463		mg/kg wet	0.05000		93	70-130			
Surrogate: Toluene-d8	0.0499		mg/kg wet	0.05000		100	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
1,1,1-Trichloroethane	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
1,1,2,2-Tetrachloroethane	0.0459	0.0020	mg/kg wet	0.05000		92	70-130			
1,1,2-Trichloroethane	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			
1,1-Dichloroethane	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
1,1-Dichloroethene	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
1,1-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,3-Trichlorobenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
1,2,3-Trichloropropane	0.0421	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,4-Trichlorobenzene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,4-Trimethylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,2-Dibromo-3-Chloropropane	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
1,2-Dibromoethane	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

1,2-Dichlorobenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichloroethane	0.0449	0.0050	mg/kg wet	0.05000		90	70-130			
1,2-Dichloropropane	0.0419	0.0050	mg/kg wet	0.05000		84	70-130			
1,3,5-Trimethylbenzene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
1,3-Dichlorobenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,3-Dichloropropane	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
1,4-Dichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,4-Dioxane	0.858	0.100	mg/kg wet	1.000		86	70-130			
2,2-Dichloropropane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
2-Butanone	0.201	0.0100	mg/kg wet	0.2500		80	70-130			
2-Chlorotoluene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
2-Hexanone	0.214	0.0100	mg/kg wet	0.2500		86	70-130			
4-Chlorotoluene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
4-Isopropyltoluene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
4-Methyl-2-Pentanone	0.208	0.0100	mg/kg wet	0.2500		83	70-130			
Acetone	0.174	0.0100	mg/kg wet	0.2500		70	70-130			
Benzene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
Bromobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Bromochloromethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Bromoform	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
Bromomethane	0.0398	0.0100	mg/kg wet	0.05000		80	70-130			
Carbon Disulfide	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Carbon Tetrachloride	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chlorobenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chloroethane	0.0373	0.0100	mg/kg wet	0.05000		75	70-130			
Chloroform	0.0443	0.0050	mg/kg wet	0.05000		89	70-130			
Chloromethane	0.0369	0.0100	mg/kg wet	0.05000		74	70-130			
cis-1,2-Dichloroethene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
cis-1,3-Dichloropropene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
Dibromochloromethane	0.0452	0.0020	mg/kg wet	0.05000		90	70-130			
Dibromomethane	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
Dichlorodifluoromethane	0.0454	0.0100	mg/kg wet	0.05000		91	70-130			
Diethyl Ether	0.0412	0.0050	mg/kg wet	0.05000		82	70-130			
Di-isopropyl ether	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
Ethyl tertiary-butyl ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Ethylbenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Hexachlorobutadiene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Isopropylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
Methyl tert-Butyl Ether	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Methylene Chloride	0.0463	0.0100	mg/kg wet	0.05000		93	70-130			
Naphthalene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
n-Butylbenzene	0.0398	0.0050	mg/kg wet	0.05000		80	70-130			
n-Propylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
sec-Butylbenzene	0.0462	0.0050	mg/kg wet	0.05000		92	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Styrene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
tert-Butylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Tertiary-amyl methyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Tetrahydrofuran	0.0374	0.0050	mg/kg wet	0.05000		75	70-130			
Toluene	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
trans-1,2-Dichloroethene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
trans-1,3-Dichloropropene	0.0424	0.0050	mg/kg wet	0.05000		85	70-130			
Trichloroethene	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Trichlorofluoromethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Vinyl Chloride	0.0368	0.0100	mg/kg wet	0.05000		74	70-130			
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Xylene P,M	0.0946	0.0100	mg/kg wet	0.1000		95	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0472		mg/kg wet	0.05000		94	70-130			
Surrogate: 4-Bromofluorobenzene	0.0484		mg/kg wet	0.05000		97	70-130			
Surrogate: Dibromofluoromethane	0.0482		mg/kg wet	0.05000		96	70-130			
Surrogate: Toluene-d8	0.0469		mg/kg wet	0.05000		94	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
1,1,1-Trichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
1,1,2,2-Tetrachloroethane	0.0495	0.0020	mg/kg wet	0.05000		99	70-130	8	20	
1,1,2-Trichloroethane	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
1,1-Dichloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	10	20	
1,1-Dichloroethene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,1-Dichloropropene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,3-Trichlorobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,2,3-Trichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	9	20	
1,2,4-Trichlorobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,4-Trimethylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	9	20	
1,2-Dibromo-3-Chloropropane	0.0436	0.0050	mg/kg wet	0.05000		87	70-130	8	20	
1,2-Dibromoethane	0.0527	0.0050	mg/kg wet	0.05000		105	70-130	12	20	
1,2-Dichlorobenzene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	6	20	
1,2-Dichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,2-Dichloropropane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	8	20	
1,3,5-Trimethylbenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
1,3-Dichlorobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	6	20	
1,3-Dichloropropane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,4-Dichlorobenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
1,4-Dioxane	0.904	0.100	mg/kg wet	1.000		90	70-130	5	20	
2,2-Dichloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	8	20	
2-Butanone	0.222	0.0100	mg/kg wet	0.2500		89	70-130	10	20	
2-Chlorotoluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	6	20	
2-Hexanone	0.249	0.0100	mg/kg wet	0.2500		100	70-130	15	20	
4-Chlorotoluene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	7	20	
4-Isopropyltoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	9	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

4-Methyl-2-Pentanone	0.230	0.0100	mg/kg wet	0.2500		92	70-130	10	20	
Acetone	0.216	0.0100	mg/kg wet	0.2500		86	70-130	21	20	D+
Benzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	9	20	
Bromobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	7	20	
Bromochloromethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Bromodichloromethane	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	9	20	
Bromoform	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Bromomethane	0.0492	0.0100	mg/kg wet	0.05000		98	70-130	21	20	D+
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Carbon Tetrachloride	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	9	20	
Chlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
Chloroethane	0.0413	0.0100	mg/kg wet	0.05000		83	70-130	10	20	
Chloroform	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Chloromethane	0.0412	0.0100	mg/kg wet	0.05000		82	70-130	11	20	
cis-1,2-Dichloroethene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	9	20	
cis-1,3-Dichloropropene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	8	20	
Dibromochloromethane	0.0509	0.0020	mg/kg wet	0.05000		102	70-130	12	20	
Dibromomethane	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
Dichlorodifluoromethane	0.0506	0.0100	mg/kg wet	0.05000		101	70-130	11	20	
Diethyl Ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	8	20	
Di-isopropyl ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	10	20	
Ethyl tertiary-butyl ether	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	9	20	
Ethylbenzene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	10	20	
Hexachlorobutadiene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Isopropylbenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	7	20	
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	7	20	
Methylene Chloride	0.0483	0.0100	mg/kg wet	0.05000		97	70-130	4	20	
Naphthalene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	15	20	
n-Butylbenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130	13	20	
n-Propylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	8	20	
sec-Butylbenzene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
Styrene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	12	20	
tert-Butylbenzene	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Tertiary-amyl methyl ether	0.0600	0.0050	mg/kg wet	0.05000		120	70-130	8	20	
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	13	20	
Tetrahydrofuran	0.0425	0.0050	mg/kg wet	0.05000		85	70-130	13	20	
Toluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
trans-1,2-Dichloroethene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
trans-1,3-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
Trichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Trichlorofluoromethane	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	8	20	
Vinyl Chloride	0.0415	0.0100	mg/kg wet	0.05000		83	70-130	12	20	
Xylene O	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	10	20	
Xylene P,M	0.105	0.0100	mg/kg wet	0.1000		105	70-130	10	20	
Surrogate: 1,2-Dichloroethane-d4	0.0471		mg/kg wet	0.05000		94	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Surrogate: 4-Bromofluorobenzene	0.0493		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: Toluene-d8	0.0485		mg/kg wet	0.05000		97	70-130			

Batch DC01938 - 5035

Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0551		mg/kg wet	0.05000		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.0492		mg/kg wet	0.05000		98	70-130			
Surrogate: Dibromofluoromethane	0.0531		mg/kg wet	0.05000		106	70-130			
Surrogate: Toluene-d8	0.0486		mg/kg wet	0.05000		97	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
1,1,1-Trichloroethane	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
1,1,2,2-Tetrachloroethane	0.0478	0.0020	mg/kg wet	0.05000		96	70-130			
1,1,2-Trichloroethane	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
1,1-Dichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
1,1-Dichloroethene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
1,1-Dichloropropene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
1,2,3-Trichlorobenzene	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

1,2,3-Trichloropropane	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,4-Trichlorobenzene	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
1,2,4-Trimethylbenzene	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromo-3-Chloropropane	0.0387	0.0050	mg/kg wet	0.05000		77	70-130			
1,2-Dibromoethane	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,2-Dichlorobenzene	0.0461	0.0050	mg/kg wet	0.05000		92	70-130			
1,2-Dichloroethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
1,2-Dichloropropane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,3,5-Trimethylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
1,3-Dichloropropane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dichlorobenzene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
1,4-Dioxane	0.850	0.100	mg/kg wet	1.000		85	70-130			
2,2-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
2-Butanone	0.249	0.0100	mg/kg wet	0.2500		100	70-130			
2-Chlorotoluene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
2-Hexanone	0.221	0.0100	mg/kg wet	0.2500		88	70-130			
4-Chlorotoluene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
4-Isopropyltoluene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
4-Methyl-2-Pentanone	0.236	0.0100	mg/kg wet	0.2500		95	70-130			
Acetone	0.244	0.0100	mg/kg wet	0.2500		97	70-130			
Benzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
Bromobenzene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
Bromochloromethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
Bromoform	0.0379	0.0050	mg/kg wet	0.05000		76	70-130			
Bromomethane	0.0578	0.0100	mg/kg wet	0.05000		116	70-130			
Carbon Disulfide	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
Carbon Tetrachloride	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
Chlorobenzene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Chloroethane	0.0494	0.0100	mg/kg wet	0.05000		99	70-130			
Chloroform	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
Chloromethane	0.0472	0.0100	mg/kg wet	0.05000		94	70-130			
cis-1,2-Dichloroethene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
cis-1,3-Dichloropropene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Dibromochloromethane	0.0440	0.0020	mg/kg wet	0.05000		88	70-130			
Dibromomethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
Dichlorodifluoromethane	0.0504	0.0100	mg/kg wet	0.05000		101	70-130			
Diethyl Ether	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Di-isopropyl ether	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
Ethyl tertiary-butyl ether	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Ethylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Hexachlorobutadiene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
Isopropylbenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Methyl tert-Butyl Ether	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Methylene Chloride	0.0472	0.0100	mg/kg wet	0.05000		94	70-130			
Naphthalene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
n-Butylbenzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
n-Propylbenzene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
sec-Butylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
Styrene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
tert-Butylbenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
Tertiary-amyl methyl ether	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Tetrachloroethene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Tetrahydrofuran	0.0434	0.0050	mg/kg wet	0.05000		87	70-130			
Toluene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
trans-1,2-Dichloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,3-Dichloropropene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
Trichloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Trichlorofluoromethane	0.0541	0.0050	mg/kg wet	0.05000		108	70-130			
Vinyl Chloride	0.0521	0.0100	mg/kg wet	0.05000		104	70-130			
Xylene O	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
Xylene P,M	0.0971	0.0100	mg/kg wet	0.1000		97	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0514		mg/kg wet	0.05000		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.0499		mg/kg wet	0.05000		100	70-130			
Surrogate: Dibromofluoromethane	0.0512		mg/kg wet	0.05000		102	70-130			
Surrogate: Toluene-d8	0.0496		mg/kg wet	0.05000		99	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,1,1-Trichloroethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	1	20	
1,1,2,2-Tetrachloroethane	0.0505	0.0020	mg/kg wet	0.05000		101	70-130	5	20	
1,1,2-Trichloroethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	6	20	
1,1-Dichloroethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,1-Dichloroethene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,1-Dichloropropene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
1,2,3-Trichlorobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	7	20	
1,2,3-Trichloropropane	0.0450	0.0050	mg/kg wet	0.05000		90	70-130	6	20	
1,2,4-Trichlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	7	20	
1,2,4-Trimethylbenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	4	20	
1,2-Dibromo-3-Chloropropane	0.0416	0.0050	mg/kg wet	0.05000		83	70-130	7	20	
1,2-Dibromoethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	5	20	
1,2-Dichlorobenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	6	20	
1,2-Dichloroethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	4	20	
1,2-Dichloropropane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	2	20	
1,3,5-Trimethylbenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	5	20	
1,3-Dichlorobenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	4	20	
1,3-Dichloropropane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	5	20	
1,4-Dichlorobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	6	20	
1,4-Dioxane	0.942	0.100	mg/kg wet	1.000		94	70-130	10	20	
2,2-Dichloropropane	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	3	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

2-Butanone	0.259	0.0100	mg/kg wet	0.2500		104	70-130	4	20	
2-Chlorotoluene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
2-Hexanone	0.227	0.0100	mg/kg wet	0.2500		91	70-130	3	20	
4-Chlorotoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
4-Isopropyltoluene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
4-Methyl-2-Pentanone	0.246	0.0100	mg/kg wet	0.2500		98	70-130	4	20	
Acetone	0.240	0.0100	mg/kg wet	0.2500		96	70-130	1	20	
Benzene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
Bromobenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
Bromochloromethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	6	20	
Bromodichloromethane	0.0562	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Bromoform	0.0401	0.0050	mg/kg wet	0.05000		80	70-130	6	20	
Bromomethane	0.0605	0.0100	mg/kg wet	0.05000		121	70-130	5	20	
Carbon Disulfide	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
Carbon Tetrachloride	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Chlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
Chloroethane	0.0505	0.0100	mg/kg wet	0.05000		101	70-130	2	20	
Chloroform	0.0533	0.0050	mg/kg wet	0.05000		107	70-130	3	20	
Chloromethane	0.0484	0.0100	mg/kg wet	0.05000		97	70-130	2	20	
cis-1,2-Dichloroethene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	4	20	
cis-1,3-Dichloropropene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	4	20	
Dibromochloromethane	0.0466	0.0020	mg/kg wet	0.05000		93	70-130	6	20	
Dibromomethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	6	20	
Dichlorodifluoromethane	0.0512	0.0100	mg/kg wet	0.05000		102	70-130	2	20	
Diethyl Ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	5	20	
Di-isopropyl ether	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	4	20	
Ethyl tertiary-butyl ether	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	5	20	
Ethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	2	20	
Hexachlorobutadiene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
Isopropylbenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
Methyl tert-Butyl Ether	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	5	20	
Methylene Chloride	0.0492	0.0100	mg/kg wet	0.05000		98	70-130	4	20	
Naphthalene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	8	20	
n-Butylbenzene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
n-Propylbenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
sec-Butylbenzene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	3	20	
Styrene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
tert-Butylbenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	4	20	
Tertiary-amyl methyl ether	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	5	20	
Tetrachloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	4	20	
Tetrahydrofuran	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	4	20	
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
trans-1,2-Dichloroethene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
trans-1,3-Dichloropropene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	6	20	
Trichloroethene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	2	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01938 - 5035

Trichlorofluoromethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	1	20	
Vinyl Chloride	0.0525	0.0100	mg/kg wet	0.05000		105	70-130	0.8	20	
Xylene O	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Xylene P,M	0.101	0.0100	mg/kg wet	0.1000		101	70-130	4	20	
Surrogate: 1,2-Dichloroethane-d4	0.0501		mg/kg wet	0.05000		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.0497		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0507		mg/kg wet	0.05000		101	70-130			
Surrogate: Toluene-d8	0.0496		mg/kg wet	0.05000		99	70-130			

5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Blank										
1,1,1,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,1-Trichloroethane	ND	0.200	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,2-Trichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethene	ND	0.200	mg/kg wet							
1,1-Dichloropropene	ND	0.200	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,3-Trichloropropane	ND	0.200	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.200	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	1.00	mg/kg wet							
1,2-Dibromoethane	ND	0.200	mg/kg wet							
1,2-Dichlorobenzene	ND	0.200	mg/kg wet							
1,2-Dichloroethane	ND	0.200	mg/kg wet							
1,2-Dichloropropane	ND	0.200	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.200	mg/kg wet							
1,3-Dichlorobenzene	ND	0.200	mg/kg wet							
1,3-Dichloropropane	ND	0.200	mg/kg wet							
1,4-Dichlorobenzene	ND	0.200	mg/kg wet							
1,4-Dioxane - Screen	ND	40.0	mg/kg wet							
2,2-Dichloropropane	ND	0.200	mg/kg wet							
2-Butanone	ND	1.00	mg/kg wet							
2-Chlorotoluene	ND	0.200	mg/kg wet							
2-Hexanone	ND	1.00	mg/kg wet							
4-Chlorotoluene	ND	0.200	mg/kg wet							
4-Isopropyltoluene	ND	0.200	mg/kg wet							
4-Methyl-2-Pentanone	ND	1.00	mg/kg wet							
Acetone	ND	1.00	mg/kg wet							
Benzene	ND	0.200	mg/kg wet							
Bromobenzene	ND	0.200	mg/kg wet							
Bromochloromethane	ND	0.200	mg/kg wet							
Bromodichloromethane	ND	0.200	mg/kg wet							



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Bromoform	ND	0.200	mg/kg wet							
Bromomethane	ND	0.200	mg/kg wet							
Carbon Disulfide	ND	0.200	mg/kg wet							
Carbon Tetrachloride	ND	0.200	mg/kg wet							
Chlorobenzene	ND	0.200	mg/kg wet							
Chloroethane	ND	0.200	mg/kg wet							
Chloroform	ND	0.200	mg/kg wet							
Chloromethane	ND	0.200	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.200	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.200	mg/kg wet							
Dibromochloromethane	ND	0.200	mg/kg wet							
Dibromomethane	ND	0.200	mg/kg wet							
Dichlorodifluoromethane	ND	0.200	mg/kg wet							
Diethyl Ether	ND	0.200	mg/kg wet							
Di-isopropyl ether	ND	0.200	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.200	mg/kg wet							
Ethylbenzene	ND	0.200	mg/kg wet							
Hexachlorobutadiene	ND	0.200	mg/kg wet							
Isopropylbenzene	ND	0.200	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.200	mg/kg wet							
Methylene Chloride	ND	0.400	mg/kg wet							
Naphthalene	ND	0.200	mg/kg wet							
n-Butylbenzene	ND	0.200	mg/kg wet							
n-Propylbenzene	ND	0.200	mg/kg wet							
sec-Butylbenzene	ND	0.200	mg/kg wet							
Styrene	ND	0.200	mg/kg wet							
tert-Butylbenzene	ND	0.200	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.200	mg/kg wet							
Tetrachloroethene	ND	0.200	mg/kg wet							
Tetrahydrofuran	ND	1.00	mg/kg wet							
Toluene	ND	0.200	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.200	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.200	mg/kg wet							
Trichloroethene	ND	0.200	mg/kg wet							
Trichlorofluoromethane	ND	0.200	mg/kg wet							
Vinyl Chloride	ND	0.200	mg/kg wet							
Xylene O	ND	0.200	mg/kg wet							
Xylene P,M	ND	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	4.93		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.53		mg/kg wet	5.000		91	70-130			
Surrogate: Dibromofluoromethane	4.73		mg/kg wet	5.000		95	70-130			
Surrogate: Toluene-d8	4.73		mg/kg wet	5.000		95	70-130			

LCS

1,1,1,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,1-Trichloroethane	1.84	0.200	mg/kg wet	2.000		92	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

1,1,2,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,2-Trichloroethane	1.82	0.200	mg/kg wet	2.000		91	70-130			
1,1-Dichloroethane	1.75	0.200	mg/kg wet	2.000		87	70-130			
1,1-Dichloroethene	1.71	0.200	mg/kg wet	2.000		86	70-130			
1,1-Dichloropropene	1.87	0.200	mg/kg wet	2.000		93	70-130			
1,2,3-Trichlorobenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,2,3-Trichloropropane	1.95	0.200	mg/kg wet	2.000		97	70-130			
1,2,4-Trichlorobenzene	1.97	0.200	mg/kg wet	2.000		99	70-130			
1,2,4-Trimethylbenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,2-Dibromo-3-Chloropropane	1.62	1.00	mg/kg wet	2.000		81	70-130			
1,2-Dibromoethane	2.02	0.200	mg/kg wet	2.000		101	70-130			
1,2-Dichlorobenzene	1.94	0.200	mg/kg wet	2.000		97	70-130			
1,2-Dichloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,2-Dichloropropane	1.79	0.200	mg/kg wet	2.000		90	70-130			
1,3,5-Trimethylbenzene	1.91	0.200	mg/kg wet	2.000		95	70-130			
1,3-Dichlorobenzene	1.95	0.200	mg/kg wet	2.000		98	70-130			
1,3-Dichloropropane	2.06	0.200	mg/kg wet	2.000		103	70-130			
1,4-Dichlorobenzene	2.01	0.200	mg/kg wet	2.000		101	70-130			
1,4-Dioxane - Screen	56.0	40.0	mg/kg wet	40.00		140	44-241			
2,2-Dichloropropane	1.83	0.200	mg/kg wet	2.000		92	70-130			
2-Butanone	9.52	1.00	mg/kg wet	10.00		95	70-130			
2-Chlorotoluene	1.91	0.200	mg/kg wet	2.000		96	70-130			
2-Hexanone	8.95	1.00	mg/kg wet	10.00		90	70-130			
4-Chlorotoluene	1.94	0.200	mg/kg wet	2.000		97	70-130			
4-Isopropyltoluene	1.94	0.200	mg/kg wet	2.000		97	70-130			
4-Methyl-2-Pentanone	9.26	1.00	mg/kg wet	10.00		93	70-130			
Acetone	9.55	1.00	mg/kg wet	10.00		95	70-130			
Benzene	1.84	0.200	mg/kg wet	2.000		92	70-130			
Bromobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130			
Bromochloromethane	1.87	0.200	mg/kg wet	2.000		93	70-130			
Bromodichloromethane	1.80	0.200	mg/kg wet	2.000		90	70-130			
Bromoform	1.54	0.200	mg/kg wet	2.000		77	70-130			
Bromomethane	1.87	0.200	mg/kg wet	2.000		94	70-130			
Carbon Disulfide	1.88	0.200	mg/kg wet	2.000		94	70-130			
Carbon Tetrachloride	1.94	0.200	mg/kg wet	2.000		97	70-130			
Chlorobenzene	1.97	0.200	mg/kg wet	2.000		98	70-130			
Chloroethane	1.74	0.200	mg/kg wet	2.000		87	70-130			
Chloroform	1.82	0.200	mg/kg wet	2.000		91	70-130			
Chloromethane	1.87	0.200	mg/kg wet	2.000		94	70-130			
cis-1,2-Dichloroethene	1.76	0.200	mg/kg wet	2.000		88	70-130			
cis-1,3-Dichloropropene	1.93	0.200	mg/kg wet	2.000		96	70-130			
Dibromochloromethane	1.66	0.200	mg/kg wet	2.000		83	70-130			
Dibromomethane	1.75	0.200	mg/kg wet	2.000		88	70-130			
Dichlorodifluoromethane	1.85	0.200	mg/kg wet	2.000		92	70-130			
Diethyl Ether	1.80	0.200	mg/kg wet	2.000		90	70-130			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0467

Quality Control Data

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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Di-isopropyl ether	1.79	0.200	mg/kg wet	2.000		90	70-130			
Ethyl tertiary-butyl ether	1.71	0.200	mg/kg wet	2.000		85	70-130			
Ethylbenzene	1.93	0.200	mg/kg wet	2.000		97	70-130			
Hexachlorobutadiene	2.44	0.200	mg/kg wet	2.000		122	70-130			
Isopropylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130			
Methyl tert-Butyl Ether	1.79	0.200	mg/kg wet	2.000		90	70-130			
Methylene Chloride	1.87	0.400	mg/kg wet	2.000		93	70-130			
Naphthalene	1.95	0.200	mg/kg wet	2.000		97	70-130			
n-Butylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130			
n-Propylbenzene	1.93	0.200	mg/kg wet	2.000		96	70-130			
sec-Butylbenzene	1.89	0.200	mg/kg wet	2.000		94	70-130			
Styrene	1.88	0.200	mg/kg wet	2.000		94	70-130			
tert-Butylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130			
Tertiary-amyl methyl ether	1.87	0.200	mg/kg wet	2.000		94	70-130			
Tetrachloroethene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Tetrahydrofuran	1.59	1.00	mg/kg wet	2.000		79	70-130			
Toluene	1.76	0.200	mg/kg wet	2.000		88	70-130			
trans-1,2-Dichloroethene	1.86	0.200	mg/kg wet	2.000		93	70-130			
trans-1,3-Dichloropropene	1.60	0.200	mg/kg wet	2.000		80	70-130			
Trichloroethene	1.89	0.200	mg/kg wet	2.000		94	70-130			
Trichlorofluoromethane	2.09	0.200	mg/kg wet	2.000		105	70-130			
Vinyl Chloride	1.73	0.200	mg/kg wet	2.000		87	70-130			
Xylene O	1.92	0.200	mg/kg wet	2.000		96	70-130			
Xylene P,M	3.81	0.400	mg/kg wet	4.000		95	70-130			
Surrogate: 1,2-Dichloroethane-d4	4.93		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.94		mg/kg wet	5.000		99	70-130			
Surrogate: Dibromofluoromethane	5.01		mg/kg wet	5.000		100	70-130			
Surrogate: Toluene-d8	4.95		mg/kg wet	5.000		99	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	1.80	0.200	mg/kg wet	2.000		90	70-130	4	20	
1,1,1-Trichloroethane	1.75	0.200	mg/kg wet	2.000		88	70-130	5	20	
1,1,2,2-Tetrachloroethane	1.83	0.200	mg/kg wet	2.000		92	70-130	3	20	
1,1,2-Trichloroethane	1.78	0.200	mg/kg wet	2.000		89	70-130	2	20	
1,1-Dichloroethane	1.76	0.200	mg/kg wet	2.000		88	70-130	0.5	20	
1,1-Dichloroethene	1.75	0.200	mg/kg wet	2.000		88	70-130	2	20	
1,1-Dichloropropene	1.83	0.200	mg/kg wet	2.000		92	70-130	2	20	
1,2,3-Trichlorobenzene	1.88	0.200	mg/kg wet	2.000		94	70-130	5	20	
1,2,3-Trichloropropane	1.85	0.200	mg/kg wet	2.000		93	70-130	5	20	
1,2,4-Trichlorobenzene	1.87	0.200	mg/kg wet	2.000		93	70-130	6	20	
1,2,4-Trimethylbenzene	1.95	0.200	mg/kg wet	2.000		98	70-130	1	20	
1,2-Dibromo-3-Chloropropane	1.53	1.00	mg/kg wet	2.000		76	70-130	6	20	
1,2-Dibromoethane	1.86	0.200	mg/kg wet	2.000		93	70-130	8	20	
1,2-Dichlorobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	3	20	
1,2-Dichloroethane	1.85	0.200	mg/kg wet	2.000		92	70-130	2	20	
1,2-Dichloropropane	1.74	0.200	mg/kg wet	2.000		87	70-130	3	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

1,3,5-Trimethylbenzene	1.86	0.200	mg/kg wet	2.000		93	70-130	2	20	
1,3-Dichlorobenzene	2.01	0.200	mg/kg wet	2.000		100	70-130	3	20	
1,3-Dichloropropane	1.94	0.200	mg/kg wet	2.000		97	70-130	6	20	
1,4-Dichlorobenzene	1.99	0.200	mg/kg wet	2.000		100	70-130	1	20	
1,4-Dioxane - Screen	42.9	40.0	mg/kg wet	40.00		107	44-241	26	200	
2,2-Dichloropropane	1.83	0.200	mg/kg wet	2.000		91	70-130	0.3	20	
2-Butanone	9.10	1.00	mg/kg wet	10.00		91	70-130	5	20	
2-Chlorotoluene	2.01	0.200	mg/kg wet	2.000		101	70-130	5	20	
2-Hexanone	8.59	1.00	mg/kg wet	10.00		86	70-130	4	20	
4-Chlorotoluene	1.98	0.200	mg/kg wet	2.000		99	70-130	2	20	
4-Isopropyltoluene	1.89	0.200	mg/kg wet	2.000		94	70-130	3	20	
4-Methyl-2-Pentanone	8.55	1.00	mg/kg wet	10.00		86	70-130	8	20	
Acetone	8.00	1.00	mg/kg wet	10.00		80	70-130	18	20	
Benzene	1.90	0.200	mg/kg wet	2.000		95	70-130	3	20	
Bromobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	0	20	
Bromochloromethane	1.86	0.200	mg/kg wet	2.000		93	70-130	0.3	20	
Bromodichloromethane	1.79	0.200	mg/kg wet	2.000		89	70-130	0.6	20	
Bromoform	1.40	0.200	mg/kg wet	2.000		70	70-130	9	20	
Bromomethane	1.97	0.200	mg/kg wet	2.000		98	70-130	5	20	
Carbon Disulfide	1.87	0.200	mg/kg wet	2.000		93	70-130	0.4	20	
Carbon Tetrachloride	1.85	0.200	mg/kg wet	2.000		92	70-130	5	20	
Chlorobenzene	1.96	0.200	mg/kg wet	2.000		98	70-130	0.5	20	
Chloroethane	1.90	0.200	mg/kg wet	2.000		95	70-130	8	20	
Chloroform	1.91	0.200	mg/kg wet	2.000		96	70-130	5	20	
Chloromethane	1.83	0.200	mg/kg wet	2.000		92	70-130	2	20	
cis-1,2-Dichloroethene	1.76	0.200	mg/kg wet	2.000		88	70-130	0.1	20	
cis-1,3-Dichloropropene	1.98	0.200	mg/kg wet	2.000		99	70-130	3	20	
Dibromochloromethane	1.73	0.200	mg/kg wet	2.000		87	70-130	4	20	
Dibromomethane	1.74	0.200	mg/kg wet	2.000		87	70-130	0.9	20	
Dichlorodifluoromethane	1.87	0.200	mg/kg wet	2.000		94	70-130	1	20	
Diethyl Ether	1.87	0.200	mg/kg wet	2.000		93	70-130	3	20	
Di-isopropyl ether	1.82	0.200	mg/kg wet	2.000		91	70-130	1	20	
Ethyl tertiary-butyl ether	1.67	0.200	mg/kg wet	2.000		84	70-130	2	20	
Ethylbenzene	1.89	0.200	mg/kg wet	2.000		94	70-130	2	20	
Hexachlorobutadiene	2.17	0.200	mg/kg wet	2.000		108	70-130	12	20	
Isopropylbenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	2	20	
Methyl tert-Butyl Ether	1.71	0.200	mg/kg wet	2.000		86	70-130	4	20	
Methylene Chloride	1.88	0.400	mg/kg wet	2.000		94	70-130	0.6	20	
Naphthalene	1.81	0.200	mg/kg wet	2.000		90	70-130	7	20	
n-Butylbenzene	1.88	0.200	mg/kg wet	2.000		94	70-130	1	20	
n-Propylbenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	1	20	
sec-Butylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130	0.5	20	
Styrene	1.91	0.200	mg/kg wet	2.000		95	70-130	2	20	
tert-Butylbenzene	1.97	0.200	mg/kg wet	2.000		98	70-130	1	20	
Tertiary-amyl methyl ether	1.73	0.200	mg/kg wet	2.000		87	70-130	8	20	



CERTIFICATE OF ANALYSIS

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Quality Control Data

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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Tetrachloroethene	1.96	0.200	mg/kg wet	2.000		98	70-130	0.8	20	
Tetrahydrofuran	1.74	1.00	mg/kg wet	2.000		87	70-130	9	20	
Toluene	1.83	0.200	mg/kg wet	2.000		92	70-130	4	20	
trans-1,2-Dichloroethene	1.85	0.200	mg/kg wet	2.000		92	70-130	0.5	20	
trans-1,3-Dichloropropene	1.55	0.200	mg/kg wet	2.000		77	70-130	4	20	
Trichloroethene	1.82	0.200	mg/kg wet	2.000		91	70-130	4	20	
Trichlorofluoromethane	1.95	0.200	mg/kg wet	2.000		97	70-130	7	20	
Vinyl Chloride	1.70	0.200	mg/kg wet	2.000		85	70-130	2	20	
Xylene O	1.96	0.200	mg/kg wet	2.000		98	70-130	2	20	
Xylene P,M	3.88	0.400	mg/kg wet	4.000		97	70-130	2	20	
Surrogate: 1,2-Dichloroethane-d4	4.95		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.68		mg/kg wet	5.000		94	70-130			
Surrogate: Dibromofluoromethane	4.97		mg/kg wet	5.000		99	70-130			
Surrogate: Toluene-d8	4.98		mg/kg wet	5.000		100	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch DC01701 - 3540C

Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	0.0192		mg/kg wet	0.02500		77	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0184		mg/kg wet	0.02500		74	30-150			
Surrogate: Tetrachloro-m-xylene	0.0169		mg/kg wet	0.02500		68	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0194		mg/kg wet	0.02500		78	30-150			

LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140			



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DC01701 - 3540C										
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Surrogate: Decachlorobiphenyl	0.0225		mg/kg wet	0.02500		90	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0216		mg/kg wet	0.02500		86	30-150			
Surrogate: Tetrachloro-m-xylene	0.0207		mg/kg wet	0.02500		83	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0223		mg/kg wet	0.02500		89	30-150			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		82	40-140	5	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		85	40-140	1	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		87	40-140	2	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		83	40-140	4	30	
Surrogate: Decachlorobiphenyl	0.0220		mg/kg wet	0.02500		88	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0209		mg/kg wet	0.02500		84	30-150			
Surrogate: Tetrachloro-m-xylene	0.0203		mg/kg wet	0.02500		81	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0222		mg/kg wet	0.02500		89	30-150			
Batch DC01930 - 3540C										
Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	0.0198		mg/kg wet	0.02500		79	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0195		mg/kg wet	0.02500		78	30-150			
Surrogate: Tetrachloro-m-xylene	0.0179		mg/kg wet	0.02500		72	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0208		mg/kg wet	0.02500		83	30-150			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		89	40-140			
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		91	40-140			
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		93	40-140			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch DC01930 - 3540C

Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		90	40-140			
Surrogate: Decachlorobiphenyl	0.0227		mg/kg wet	0.02500		91	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0221		mg/kg wet	0.02500		88	30-150			
Surrogate: Tetrachloro-m-xylene	0.0217		mg/kg wet	0.02500		87	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0236		mg/kg wet	0.02500		94	30-150			

LCS Dup

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140	3	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		88	40-140	3	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140	4	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		86	40-140	4	30	
Surrogate: Decachlorobiphenyl	0.0219		mg/kg wet	0.02500		87	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0211		mg/kg wet	0.02500		84	30-150			
Surrogate: Tetrachloro-m-xylene	0.0209		mg/kg wet	0.02500		84	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0230		mg/kg wet	0.02500		92	30-150			

8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.080	mg/kg wet							
1,4-Dichlorobenzene	ND	0.084	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.082	mg/kg wet							
2,4-Dichlorophenol	ND	0.083	mg/kg wet							
2,4-Dimethylphenol	ND	0.075	mg/kg wet							
2,4-Dinitrophenol	ND	0.557	mg/kg wet							
2,4-Dinitrotoluene	ND	0.107	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.094	mg/kg wet							
2-Methylnaphthalene	ND	0.072	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3'-Dichlorobenzidine	ND	0.167	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							
4-Chloroaniline	ND	0.167	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.167	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0467

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.090	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.089	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.051	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.056	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.084	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	0.667	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.081	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.46		mg/kg wet	3.333		74	30-130			
Surrogate: 2,4,6-Tribromophenol	4.47		mg/kg wet	5.000		89	30-130			
Surrogate: 2-Chlorophenol-d4	3.83		mg/kg wet	5.000		77	30-130			
Surrogate: 2-Fluorobiphenyl	2.50		mg/kg wet	3.333		75	30-130			
Surrogate: 2-Fluorophenol	3.66		mg/kg wet	5.000		73	30-130			
Surrogate: Nitrobenzene-d5	2.63		mg/kg wet	3.333		79	30-130			
Surrogate: Phenol-d6	3.82		mg/kg wet	5.000		76	30-130			
Surrogate: p-Terphenyl-d14	3.49		mg/kg wet	3.333		105	30-130			

LCS

1,2,4-Trichlorobenzene	2.47	0.333	mg/kg wet	3.333		74	40-140			
1,2-Dichlorobenzene	2.40	0.333	mg/kg wet	3.333		72	40-140			



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Quality Control Data

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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

1,3-Dichlorobenzene	2.39	0.080	mg/kg wet	3.333		72	40-140			
1,4-Dichlorobenzene	2.37	0.084	mg/kg wet	3.333		71	40-140			
2,4,5-Trichlorophenol	3.19	0.333	mg/kg wet	3.333		96	30-130			
2,4,6-Trichlorophenol	3.06	0.082	mg/kg wet	3.333		92	30-130			
2,4-Dichlorophenol	2.78	0.083	mg/kg wet	3.333		84	30-130			
2,4-Dimethylphenol	2.79	0.075	mg/kg wet	3.333		84	30-130			
2,4-Dinitrophenol	4.22	0.557	mg/kg wet	3.333		126	30-130			
2,4-Dinitrotoluene	3.59	0.107	mg/kg wet	3.333		108	40-140			
2,6-Dinitrotoluene	3.08	0.333	mg/kg wet	3.333		92	40-140			
2-Chloronaphthalene	2.53	0.333	mg/kg wet	3.333		76	40-140			
2-Chlorophenol	2.55	0.094	mg/kg wet	3.333		77	30-130			
2-Methylnaphthalene	2.52	0.072	mg/kg wet	3.333		76	40-140			
2-Methylphenol	2.58	0.333	mg/kg wet	3.333		77	30-130			
2-Nitrophenol	2.67	0.333	mg/kg wet	3.333		80	30-130			
3,3'-Dichlorobenzidine	2.71	0.167	mg/kg wet	3.333		81	40-140			
3+4-Methylphenol	5.37	0.667	mg/kg wet	6.667		80	30-130			
4-Bromophenyl-phenylether	3.18	0.333	mg/kg wet	3.333		95	40-140			
4-Chloroaniline	1.46	0.167	mg/kg wet	3.333		44	40-140			
4-Nitrophenol	3.44	1.67	mg/kg wet	3.333		103	30-130			
Acenaphthene	2.70	0.333	mg/kg wet	3.333		81	40-140			
Acenaphthylene	2.48	0.167	mg/kg wet	3.333		75	40-140			
Acetophenone	2.41	0.667	mg/kg wet	3.333		72	40-140			
Aniline	1.74	1.67	mg/kg wet	3.333		52	40-140			
Anthracene	3.17	0.333	mg/kg wet	3.333		95	40-140			
Azobenzene	3.04	0.333	mg/kg wet	3.333		91	40-140			
Benzo(a)anthracene	3.35	0.333	mg/kg wet	3.333		100	40-140			
Benzo(a)pyrene	3.58	0.167	mg/kg wet	3.333		107	40-140			
Benzo(b)fluoranthene	3.89	0.333	mg/kg wet	3.333		117	40-140			
Benzo(g,h,i)perylene	3.45	0.333	mg/kg wet	3.333		104	40-140			
Benzo(k)fluoranthene	2.94	0.333	mg/kg wet	3.333		88	40-140			
bis(2-Chloroethoxy)methane	2.57	0.333	mg/kg wet	3.333		77	40-140			
bis(2-Chloroethyl)ether	2.55	0.090	mg/kg wet	3.333		77	40-140			
bis(2-chloroisopropyl)Ether	2.47	0.089	mg/kg wet	3.333		74	40-140			
bis(2-Ethylhexyl)phthalate	3.62	0.333	mg/kg wet	3.333		109	40-140			
Butylbenzylphthalate	3.60	0.333	mg/kg wet	3.333		108	40-140			
Chrysene	3.32	0.167	mg/kg wet	3.333		100	40-140			
Dibenzo(a,h)Anthracene	3.70	0.051	mg/kg wet	3.333		111	40-140			
Dibenzofuran	2.77	0.333	mg/kg wet	3.333		83	40-140			
Diethylphthalate	3.18	0.333	mg/kg wet	3.333		95	40-140			
Dimethylphthalate	3.05	0.333	mg/kg wet	3.333		91	40-140			
Di-n-butylphthalate	3.41	0.333	mg/kg wet	3.333		102	40-140			
Di-n-octylphthalate	3.48	0.333	mg/kg wet	3.333		104	40-140			
Fluoranthene	3.30	0.333	mg/kg wet	3.333		99	40-140			
Fluorene	3.09	0.333	mg/kg wet	3.333		93	40-140			
Hexachlorobenzene	3.15	0.056	mg/kg wet	3.333		95	40-140			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0467

Quality Control Data

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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Hexachlorobutadiene	2.62	0.333	mg/kg wet	3.333		79	40-140			
Hexachloroethane	2.41	0.084	mg/kg wet	3.333		72	40-140			
Indeno(1,2,3-cd)Pyrene	3.61	0.333	mg/kg wet	3.333		108	40-140			
Isophorone	2.25	0.333	mg/kg wet	3.333		67	40-140			
Naphthalene	2.47	0.333	mg/kg wet	3.333		74	40-140			
Nitrobenzene	2.54	0.333	mg/kg wet	3.333		76	40-140			
N-Nitrosodimethylamine	2.22	0.333	mg/kg wet	3.333		67	40-140			
Pentachlorophenol	3.76	0.667	mg/kg wet	3.333		113	30-130			
Phenanthrene	3.09	0.333	mg/kg wet	3.333		93	40-140			
Phenol	2.76	0.081	mg/kg wet	3.333		83	30-130			
Pyrene	3.29	0.333	mg/kg wet	3.333		99	40-140			
Pyridine	1.94	1.67	mg/kg wet	3.333		58	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.49		mg/kg wet	3.333		75	30-130			
Surrogate: 2,4,6-Tribromophenol	5.39		mg/kg wet	5.000		108	30-130			
Surrogate: 2-Chlorophenol-d4	3.94		mg/kg wet	5.000		79	30-130			
Surrogate: 2-Fluorobiphenyl	2.67		mg/kg wet	3.333		80	30-130			
Surrogate: 2-Fluorophenol	3.78		mg/kg wet	5.000		76	30-130			
Surrogate: Nitrobenzene-d5	2.71		mg/kg wet	3.333		81	30-130			
Surrogate: Phenol-d6	3.98		mg/kg wet	5.000		80	30-130			
Surrogate: p-Terphenyl-d14	3.51		mg/kg wet	3.333		105	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.26	0.333	mg/kg wet	3.333		68	40-140	9	30	
1,2-Dichlorobenzene	2.14	0.333	mg/kg wet	3.333		64	40-140	11	30	
1,3-Dichlorobenzene	2.12	0.080	mg/kg wet	3.333		64	40-140	12	30	
1,4-Dichlorobenzene	2.12	0.084	mg/kg wet	3.333		64	40-140	11	30	
2,4,5-Trichlorophenol	3.11	0.333	mg/kg wet	3.333		93	30-130	2	30	
2,4,6-Trichlorophenol	3.00	0.082	mg/kg wet	3.333		90	30-130	2	30	
2,4-Dichlorophenol	2.67	0.083	mg/kg wet	3.333		80	30-130	4	30	
2,4-Dimethylphenol	2.69	0.075	mg/kg wet	3.333		81	30-130	4	30	
2,4-Dinitrophenol	4.14	0.557	mg/kg wet	3.333		124	30-130	2	30	
2,4-Dinitrotoluene	3.52	0.107	mg/kg wet	3.333		106	40-140	2	30	
2,6-Dinitrotoluene	3.06	0.333	mg/kg wet	3.333		92	40-140	0.6	30	
2-Chloronaphthalene	2.46	0.333	mg/kg wet	3.333		74	40-140	3	30	
2-Chlorophenol	2.33	0.094	mg/kg wet	3.333		70	30-130	9	30	
2-Methylnaphthalene	2.42	0.072	mg/kg wet	3.333		73	40-140	4	30	
2-Methylphenol	2.41	0.333	mg/kg wet	3.333		72	30-130	7	30	
2-Nitrophenol	2.49	0.333	mg/kg wet	3.333		75	30-130	7	30	
3,3'-Dichlorobenzidine	2.83	0.167	mg/kg wet	3.333		85	40-140	4	30	
3+4-Methylphenol	5.18	0.667	mg/kg wet	6.667		78	30-130	4	30	
4-Bromophenyl-phenylether	3.13	0.333	mg/kg wet	3.333		94	40-140	2	30	
4-Chloroaniline	1.61	0.167	mg/kg wet	3.333		48	40-140	10	30	
4-Nitrophenol	3.37	1.67	mg/kg wet	3.333		101	30-130	2	30	
Acenaphthene	2.66	0.333	mg/kg wet	3.333		80	40-140	1	30	
Acenaphthylene	2.43	0.167	mg/kg wet	3.333		73	40-140	2	30	
Acetophenone	2.26	0.667	mg/kg wet	3.333		68	40-140	6	30	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0467

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8270D Semi-Volatile Organic Compounds

Batch DC01609 - 3546

Aniline	1.68	1.67	mg/kg wet	3.333		50	40-140	4	30	
Anthracene	3.12	0.333	mg/kg wet	3.333		94	40-140	2	30	
Azobenzene	2.98	0.333	mg/kg wet	3.333		89	40-140	2	30	
Benzo(a)anthracene	3.25	0.333	mg/kg wet	3.333		97	40-140	3	30	
Benzo(a)pyrene	3.55	0.167	mg/kg wet	3.333		106	40-140	1	30	
Benzo(b)fluoranthene	3.44	0.333	mg/kg wet	3.333		103	40-140	12	30	
Benzo(g,h,i)perylene	3.40	0.333	mg/kg wet	3.333		102	40-140	2	30	
Benzo(k)fluoranthene	3.34	0.333	mg/kg wet	3.333		100	40-140	13	30	
bis(2-Chloroethoxy)methane	2.44	0.333	mg/kg wet	3.333		73	40-140	5	30	
bis(2-Chloroethyl)ether	2.29	0.090	mg/kg wet	3.333		69	40-140	11	30	
bis(2-chloroisopropyl)Ether	2.23	0.089	mg/kg wet	3.333		67	40-140	10	30	
bis(2-Ethylhexyl)phthalate	3.56	0.333	mg/kg wet	3.333		107	40-140	2	30	
Butylbenzylphthalate	3.51	0.333	mg/kg wet	3.333		105	40-140	3	30	
Chrysene	3.23	0.167	mg/kg wet	3.333		97	40-140	3	30	
Dibenzo(a,h)Anthracene	3.63	0.051	mg/kg wet	3.333		109	40-140	2	30	
Dibenzofuran	2.74	0.333	mg/kg wet	3.333		82	40-140	1	30	
Diethylphthalate	3.16	0.333	mg/kg wet	3.333		95	40-140	0.6	30	
Dimethylphthalate	3.02	0.333	mg/kg wet	3.333		91	40-140	0.9	30	
Di-n-butylphthalate	3.35	0.333	mg/kg wet	3.333		101	40-140	2	30	
Di-n-octylphthalate	3.50	0.333	mg/kg wet	3.333		105	40-140	0.6	30	
Fluoranthene	3.20	0.333	mg/kg wet	3.333		96	40-140	3	30	
Fluorene	3.06	0.333	mg/kg wet	3.333		92	40-140	0.9	30	
Hexachlorobenzene	3.11	0.056	mg/kg wet	3.333		93	40-140	1	30	
Hexachlorobutadiene	2.36	0.333	mg/kg wet	3.333		71	40-140	11	30	
Hexachloroethane	2.14	0.084	mg/kg wet	3.333		64	40-140	12	30	
Indeno(1,2,3-cd)Pyrene	3.56	0.333	mg/kg wet	3.333		107	40-140	1	30	
Isophorone	2.16	0.333	mg/kg wet	3.333		65	40-140	4	30	
Naphthalene	2.30	0.333	mg/kg wet	3.333		69	40-140	7	30	
Nitrobenzene	2.33	0.333	mg/kg wet	3.333		70	40-140	8	30	
N-Nitrosodimethylamine	2.02	0.333	mg/kg wet	3.333		61	40-140	9	30	
Pentachlorophenol	3.67	0.667	mg/kg wet	3.333		110	30-130	2	30	
Phenanthrene	3.04	0.333	mg/kg wet	3.333		91	40-140	2	30	
Phenol	2.55	0.081	mg/kg wet	3.333		77	30-130	8	30	
Pyrene	3.21	0.333	mg/kg wet	3.333		96	40-140	2	30	
Pyridine	1.65	1.67	mg/kg wet	3.333		49	40-140	16	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.22		mg/kg wet	3.333		67	30-130			
Surrogate: 2,4,6-Tribromophenol	5.31		mg/kg wet	5.000		106	30-130			
Surrogate: 2-Chlorophenol-d4	3.61		mg/kg wet	5.000		72	30-130			
Surrogate: 2-Fluorobiphenyl	2.62		mg/kg wet	3.333		79	30-130			
Surrogate: 2-Fluorophenol	3.44		mg/kg wet	5.000		69	30-130			
Surrogate: Nitrobenzene-d5	2.50		mg/kg wet	3.333		75	30-130			
Surrogate: Phenol-d6	3.71		mg/kg wet	5.000		74	30-130			
Surrogate: p-Terphenyl-d14	3.46		mg/kg wet	3.333		104	30-130			

Classical Chemistry



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Classical Chemistry

Batch DC01613 - General Preparation

Blank

Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							

LCS

Reactive Cyanide	3.8	2.0	mg/kg	100.3	4	0.68-5.41				
Reactive Sulfide	ND	2.0	mg/kg	10.00	0	0-44				

Batch DC01631 - General Preparation

Reference

Flashpoint	81		°F	81.00	100	97.9-102.1				
------------	----	--	----	-------	-----	------------	--	--	--	--

Batch DC01819 - General Preparation

Blank

Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							

LCS

Reactive Cyanide	4.0	2.0	mg/kg	100.3	4	0.68-5.41				
Reactive Sulfide	ND	2.0	mg/kg	10.00	0	0-44				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

Notes and Definitions

- Z18 Temperature is not within 23 +/-2 °C.
- Z-10a Soil pH measured in water at 19.4 °C.
- Z-10 Soil pH measured in water at 19.2 °C.
- U Analyte included in the analysis, but not detected
- SD Surrogate recovery(ies) diluted below the MRL (SD).
- Q Calibration required quadratic regression (Q).
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- E Reported above the quantitation limit; Estimated value (E).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- > Greater than.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0467

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 20C0467

Date Received: 3/13/2020

Project Due Date: 3/20/2020

Days for Project: 5 Day

Shipped/Delivered Via: ESS Courier

1. Air bill manifest present? No
 Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
 Temp: 3.6 Iced with: Ice
5. Was COC signed and dated by client? Yes

6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. Were labs informed about short holds & rushes? Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes / No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No

13. Are the samples properly preserved? Yes / No
 a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
 b. Low Level VOA vials frozen: Date: 3/13/20 Time: 2035 By: WA

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes No
 a. Was there a need to contact the client? Yes No
 Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	23719	Yes	N/A	Yes	VOA Vial	MeOH	
1	23723	Yes	N/A	Yes	VOA Vial	DI Water	
1	23724	Yes	N/A	Yes	VOA Vial	DI Water	
1	23731	Yes	N/A	Yes	8 oz jar	NP	
1	23732	Yes	N/A	Yes	8 oz jar	NP	
2	23720	Yes	N/A	Yes	VOA Vial	MeOH	
2	23725	Yes	N/A	Yes	VOA Vial	DI Water	
2	23726	Yes	N/A	Yes	VOA Vial	DI Water	
2	23733	Yes	N/A	Yes	8 oz jar	NP	
2	23734	Yes	N/A	Yes	8 oz jar	NP	
3	23721	Yes	N/A	Yes	VOA Vial	MeOH	
3	23727	Yes	N/A	Yes	VOA Vial	DI Water	
3	23728	Yes	N/A	Yes	VOA Vial	DI Water	
3	23735	Yes	N/A	Yes	8 oz jar	NP	
3	23736	Yes	N/A	Yes	8 oz jar	NP	
4	23722	Yes	N/A	Yes	VOA Vial	MeOH	
4	23729	Yes	N/A	Yes	VOA Vial	DI Water	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 20C0467

Date Received: 3/13/2020

		Yes	N/A	Yes	VOA Vial	DI Water
4	23730	Yes	N/A	Yes	8 oz jar	NP
4	23737	Yes	N/A	Yes	8 oz jar	NP
4	23738	Yes	N/A	Yes	8 oz jar	NP

2nd Review

Were all containers scanned into storage/lab?


Are barcode labels on correct containers?




Are all Flashpoint stickers attached/container ID # circled?

Are all Hex Chrome stickers attached?

Are all QC stickers attached?

Are VOA stickers attached if bubbles noted?

Initials: 
 Yes / No NA
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA

Completed By: 
 Reviewed By: 
 Delivered By: 

Date & Time: 3/13/20 2006
 Date & Time: 3/13/20 2036
 Date & Time: 3/12/20 2036

Chain-of-Custody Record

Laboratory: ESS

Laboratory Job # 2000467
(Lab use only)

Page 2 of 8



400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073

Project Name: Former Tombarello

Project Location: Lawrence MA

Project Number: 1802441

Project Manager: L. Lombardo
339.221.3551

Send Report to: Elise Farrington

Send EDD to: labdata@geiconsultants.com

Preservative							
MeOH	DI H2O	None	None				

Analysis

VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals**, Ignitability, Corrosivity, RC/NIS	PCBs*	Pyridine	ML 4/17/20
x	x	x	x	x	
x	x	x	x	x	
x	x	x	x	x	
x	x	x	x	x	

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

MCP PRESUMPTIVE CERTAINTY REQUIRED:

YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

If Yes, Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials
		Date	Time			
1	1802441-Lot2-DISP05	3/12/2020	9:40	SO	5	BRL
2	1802441-Lot2-DISP06	3/12/2020	10:30	SO	5	BRL
3	1802441-Lot2-DISP04	3/12/2020	12:15	SO	5	BRL
4	1802441-Lot2-DISP03	3/12/2020	14:10	SO	5	BRL

Sample Specific Remarks

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by sampler: (signature)	Date: 3/13/20	Time: 1400	Received by: (signature)
Relinquished by: (signature)	Date: 3/13/20	Time: 1905	Received by: (signature)
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
Relinquished by: (signature)	Date:	Time:	Received by: (signature)

Turnaround Time (Business days):

Normal _____ Other _____
10-Day _____ 7-Day _____
5-Day 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

* Manual Soxhlet Extraction for PCBs. Analysis must be performed in accordance with GEI's Site Specific QAPP.

**Run TCLP if 20x Rule Exceeded

Chain-of-Custody Record

Laboratory: ESS

Laboratory Job # 2000467
(Lab use only)

Page 2 of 8



400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073

Project Name: Former Tombarello

Project Location: Lawrence MA

Project Number: 1802441

Project Manager: L. Lombardo
339.221.3551

Send Report to: Elise Farrington

Send EDD to: labdata@geiconsultants.com

Preservative

MeOH	DI H2O	None	None						
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Analysis

VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals**, Ignitability, Corrosivity, RCN/S	PCBs*								
x	x	x	x								
x	x	x	x								
x	x	x	x								
x	x	x	x								

Sample Handling

Samples Field Filtered

YES NO NA

Sampled Shipped With Ice

YES NO

Sample Specific Remarks

MCP PRESUMPTIVE CERTAINTY REQUIRED: YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

If Yes, Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	VOC (High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals**, Ignitability, Corrosivity, RCN/S	PCBs*									
		Date	Time																
1	1802441-Lot2-DISP05	3/12/2020	9:40	SO	5	BRL	x	x	x	x									
2	1802441-Lot2-DISP06	3/12/2020	10:30	SO	5	BRL	x	x	x	x									
3	1802441-Lot2-DISP04	3/12/2020	12:15	SO	5	BRL	x	x	x	x									
4	1802441-Lot2-DISP03	3/12/2020	14:10	SO	5	BRL	x	x	x	x									

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Relinquished by sampler: (signature)	Date: 3/13/20	Time: 1400	Received by: (signature)
Relinquished by: (signature)	Date: 3/13/20	Time: 1905	Received by: (signature)
Relinquished by: (signature)	Date:	Time:	Received by: (signature)
Relinquished by: (signature)	Date:	Time:	Received by: (signature)

Turnaround Time (Business days):

Normal _____ Other _____
10-Day _____ 7-Day _____
5-Day 3-Day _____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

* Manual Soxhlet Extraction for PCBs. Analysis must be performed in accordance with GEI's Site Specific QAPP.

**Run TCLP if 20x Rule Exceeded



CERTIFICATE OF ANALYSIS

Leslie Lombardo
 GEI Consultants, Inc.
 400 Unicorn Park Drive
 Woburn, MA 01801

RE: Tombarello Site Investigation (1802441)
ESS Laboratory Work Order Number: 20C0468

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
 Laboratory Director

REVIEWED
 By ESS Laboratory at 1:57 pm, Apr 17, 2020

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

SAMPLE RECEIPT

The following samples were received on March 13, 2020 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on March 13, 2020 at 20:32.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 April 16, 2020: This report has been revised to include Pyridine to all samples per the client's request.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
20C0468-01	1802441-Lot2-DISP01	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B, 8260B Low, 8270D, 9045
20C0468-02	1802441-Lot2-DISP02	Soil	1010, 1311, 1311/6010C, 6010C, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260B Low, 8270D, 9045



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

20C0468-01 Reported above the quantitation limit; Estimated value (E).

Naphthalene

D0C0330-CCV1 Continuing Calibration %Diff/Drift is below control limit (CD-).

Acetone (21% @ 20%), Chloroethane (21% @ 20%), Chloromethane (22% @ 20%), Tetrahydrofuran (22% @ 20%), Vinyl Chloride (22% @ 20%)

DC01838-BSD1 Relative percent difference for duplicate is outside of criteria (D+).

Acetone (21% @ 20%), Bromomethane (21% @ 20%)

8082A Polychlorinated Biphenyls (PCB)

20C0468-01 Surrogate recovery(ies) diluted below the MRL (SD).

Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

20C0468-02 Surrogate recovery(ies) diluted below the MRL (SD).

Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

8270D Semi-Volatile Organic Compounds

20C0468-01 Elevated Method Reporting Limits due to sample matrix (EL).

20C0468-02 Elevated Method Reporting Limits due to sample matrix (EL).

D0C0257-CCV1 Calibration required quadratic regression (Q).

2,4-Dinitrophenol (104% @ 80-120%), Pentachlorophenol (99% @ 80-120%)

D0C0312-CCV1 Calibration required quadratic regression (Q).

2,4-Dinitrophenol (120% @ 80-120%), Pentachlorophenol (116% @ 80-120%)

Total Metals

20C0468-01 Elevated Method Reporting Limits due to sample matrix (EL).

Silver

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
 Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **20C0468-01 through 20C0468-02**

Matrices: () Ground Water/Surface Water Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|--|---|---|---|---|------------------------------------|
| <input checked="" type="checkbox"/> 8260 VOC
CAM II A | <input checked="" type="checkbox"/> 7470/7471 Hg
CAM III B | () MassDEP VPH
(GC/PID/FID)
CAM IV A | <input checked="" type="checkbox"/> 8082 PCB
CAM V A | () 9014 Total
Cyanide/PAC
CAM VI A | () 6860 Perchlorate
CAM VIII B |
| <input checked="" type="checkbox"/> 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 |
| <input checked="" type="checkbox"/> 6010 Metals
CAM III A | () 6020 Metals
CAM III D | () MassDEP EPH
CAM IV B | () 8151 Herbicides
CAM V C | () 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 the 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. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes No ()
b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? 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 protocols(s)? Yes () No *
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 *
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes () No *

**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, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: March 25, 2020
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	88.2 (2.35)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Barium	188 (2.35)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Cadmium	0.92 (0.47)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Chromium	32.1 (0.94)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Lead	617 (4.70)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Mercury	0.887 (0.305)		7471B		10	MKS	03/17/20 8:45	0.76	40	DC01643
Selenium	ND (4.70)		6010C		1	KJK	03/17/20 18:21	2.49	100	DC01641
Silver	EL ND (47.0)		6010C		100	KJK	03/18/20 13:52	2.49	100	DC01641



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.284 (0.050)		1311/6010C		1	KJK	03/20/20 17:59	50	50	DC02020



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1,1-Trichloroethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1,2,2-Tetrachloroethane	ND (0.0014)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1,2-Trichloroethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1-Dichloroethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1-Dichloroethene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,1-Dichloropropene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2,3-Trichlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2,3-Trichloropropane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2,4-Trichlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2,4-Trimethylbenzene	0.0043 (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2-Dibromo-3-Chloropropane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2-Dibromoethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2-Dichlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2-Dichloroethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,2-Dichloropropane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,3,5-Trimethylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,3-Dichlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,3-Dichloropropane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,4-Dichlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
1,4-Dioxane	ND (0.0696)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
2,2-Dichloropropane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
2-Butanone	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
2-Chlorotoluene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
2-Hexanone	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
4-Chlorotoluene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
4-Isopropyltoluene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
4-Methyl-2-Pentanone	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Acetone	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Benzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Bromobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Bromochloromethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Bromoform	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Bromomethane	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Carbon Disulfide	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Carbon Tetrachloride	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Chlorobenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Chloroethane	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Chloroform	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Chloromethane	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
cis-1,2-Dichloroethene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
cis-1,3-Dichloropropene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Dibromochloromethane	ND (0.0014)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Dibromomethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Dichlorodifluoromethane	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Diethyl Ether	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Di-isopropyl ether	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Ethyl tertiary-butyl ether	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Ethylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Hexachlorobutadiene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Isopropylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Methyl tert-Butyl Ether	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Methylene Chloride	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Naphthalene	E 0.583 (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
n-Butylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
n-Propylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
sec-Butylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Styrene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
tert-Butylbenzene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Tertiary-amyl methyl ether	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Tetrachloroethene	0.0461 (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Tetrahydrofuran	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Toluene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
trans-1,3-Dichloropropene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Trichloroethene	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Trichlorofluoromethane	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Vinyl Chloride	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Xylene O	ND (0.0035)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Xylene P,M	ND (0.0070)		8260B Low		1	03/18/20 23:14	D0C0330	DC01838
Xylenes (Total)	ND (0.00696)		8260B Low		1	03/18/20 23:14		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>85 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>85 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>93 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>107 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 12.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1,1-Trichloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1,2,2-Tetrachloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1,2-Trichloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1-Dichloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1-Dichloroethene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,1-Dichloropropene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2,3-Trichlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2,3-Trichloropropane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2,4-Trichlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2,4-Trimethylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2-Dibromo-3-Chloropropane	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2-Dibromoethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2-Dichlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2-Dichloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,2-Dichloropropane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,3,5-Trimethylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,3-Dichlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,3-Dichloropropane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,4-Dichlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
1,4-Dioxane - Screen	ND (64.3)		8260B		1	03/20/20 12:57	D0C0376	DC02018
2,2-Dichloropropane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
2-Butanone	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
2-Chlorotoluene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
2-Hexanone	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
4-Chlorotoluene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
4-Isopropyltoluene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
4-Methyl-2-Pentanone	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Acetone	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Benzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Bromobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Bromochloromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 12.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Bromoform	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Bromomethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Carbon Disulfide	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Carbon Tetrachloride	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Chlorobenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Chloroethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Chloroform	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Chloromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
cis-1,2-Dichloroethene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
cis-1,3-Dichloropropene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Dibromochloromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Dibromomethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Dichlorodifluoromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Diethyl Ether	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Di-isopropyl ether	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Ethyl tertiary-butyl ether	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Ethylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Hexachlorobutadiene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Isopropylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Methyl tert-Butyl Ether	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Methylene Chloride	ND (0.643)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Naphthalene	33.5 (3.22)		8260B		10	03/20/20 14:17	D0C0376	DC02018
n-Butylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
n-Propylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
sec-Butylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Styrene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
tert-Butylbenzene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Tertiary-amyl methyl ether	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Tetrachloroethene	1.77 (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Tetrahydrofuran	ND (1.61)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Toluene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
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Percent Solids: 85
Initial Volume: 12.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
trans-1,3-Dichloropropene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Trichloroethene	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Trichlorofluoromethane	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Vinyl Chloride	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Xylene O	ND (0.322)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Xylene P,M	ND (0.643)		8260B		1	03/20/20 12:57	D0C0376	DC02018
Xylenes (Total)	ND (0.643)		8260B		1	03/20/20 12:57		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>114 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>105 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 20
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1221	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1232	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1242	38.5 (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1248	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1254	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1260	3.6 (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1262	ND (2.9)		8082A		50	03/19/20 14:39		DC01701
Aroclor 1268	ND (2.9)		8082A		50	03/19/20 14:39		DC01701

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	%	SD	30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	%	SD	30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (1.58)		8270D		2	03/19/20 0:54	D0C0312	DC01610
1,2-Dichlorobenzene	ND (1.58)		8270D		2	03/19/20 0:54	D0C0312	DC01610
1,3-Dichlorobenzene	ND (0.759)		8270D		2	03/19/20 0:54	D0C0312	DC01610
1,4-Dichlorobenzene	ND (0.797)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4,5-Trichlorophenol	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4,6-Trichlorophenol	ND (0.778)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4-Dichlorophenol	ND (0.787)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4-Dimethylphenol	1.34 (0.711)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4-Dinitrophenol	ND (5.28)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,4-Dinitrotoluene	ND (1.01)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2,6-Dinitrotoluene	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2-Chloronaphthalene	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2-Chlorophenol	ND (0.892)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2-Methylnaphthalene	26.6 (0.683)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2-Methylphenol	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
2-Nitrophenol	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
3,3'-Dichlorobenzidine	ND (0.702)		8270D		2	03/19/20 0:54	D0C0312	DC01610
3+4-Methylphenol	ND (6.33)		8270D		2	03/19/20 0:54	D0C0312	DC01610
4-Bromophenyl-phenylether	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
4-Chloroaniline	ND (0.711)		8270D		2	03/19/20 0:54	D0C0312	DC01610
4-Nitrophenol	ND (15.8)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Acenaphthene	85.5 (7.68)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Acenaphthylene	11.3 (0.607)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Acetophenone	ND (6.33)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Aniline	ND (15.8)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Anthracene	161 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Azobenzene	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Benzo(a)anthracene	254 (5.50)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Benzo(a)pyrene	223 (5.22)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Benzo(b)fluoranthene	178 (7.02)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Benzo(g,h,i)perylene	108 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Benzo(k)fluoranthene	155 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
bis(2-Chloroethyl)ether	ND (0.854)		8270D		2	03/19/20 0:54	D0C0312	DC01610
bis(2-chloroisopropyl)Ether	ND (0.844)		8270D		2	03/19/20 0:54	D0C0312	DC01610
bis(2-Ethylhexyl)phthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Butylbenzylphthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Chrysene	223 (15.8)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Dibenzo(a,h)Anthracene	45.3 (0.484)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Dibenzofuran	59.8 (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Diethylphthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Dimethylphthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Di-n-butylphthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Di-n-octylphthalate	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Fluoranthene	561 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Fluorene	85.5 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Hexachlorobenzene	ND (0.531)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Hexachlorobutadiene	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Hexachloroethane	ND (0.797)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Indeno(1,2,3-cd)Pyrene	116 (10.2)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Isophorone	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Naphthalene	50.0 (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Nitrobenzene	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
N-Nitrosodimethylamine	ND (3.16)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Pentachlorophenol	ND (2.73)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Phenanthrene	507 (7.87)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Phenol	1.53 (0.768)		8270D		2	03/19/20 0:54	D0C0312	DC01610
Pyrene	383 (31.6)		8270D		20	03/19/20 19:30	D0C0312	DC01610
Pyridine	ND (15.8)		8270D		2	03/19/20 0:54	D0C0312	DC01610

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	80 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	100 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	90 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		96 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		87 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		90 %		30-130				
<i>Surrogate: Phenol-d6</i>		90 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		124 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.50 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01329
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.2 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/16/20 13:30	°F	DC01631
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/18/20 11:11	mg/kg	DC01819
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/18/20 11:11	mg/kg	DC01819



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP01
Date Sampled: 03/13/20 08:45
Percent Solids: 85
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-01
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/19/20 16:45

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	20.3 (N/A)		1311		1	MKS	03/20/20 9:12	DC01952
Temperature (Max C)	21.1 (N/A)		1311		1	MKS	03/20/20 9:12	DC01952
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	9.79 (2.04)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Barium	153 (2.04)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Cadmium	2.14 (0.41)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Chromium	29.7 (0.82)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Lead	233 (4.09)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Mercury	0.561 (0.028)		7471B		1	MKS	03/17/20 8:14	0.82	40	DC01643
Selenium	ND (4.09)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641
Silver	0.71 (0.41)		6010C		1	KJK	03/17/20 18:54	2.84	100	DC01641



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.476 (0.050)		1311/6010C		1	KJK	03/24/20 15:42	50	50	DC02426



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 12.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1,1-Trichloroethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1,2,2-Tetrachloroethane	ND (0.0010)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1,2-Trichloroethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1-Dichloroethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1-Dichloroethene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,1-Dichloropropene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2,3-Trichlorobenzene	0.0026 (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2,3-Trichloropropane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2,4-Trichlorobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2,4-Trimethylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2-Dibromo-3-Chloropropane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2-Dibromoethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2-Dichlorobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2-Dichloroethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,2-Dichloropropane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,3,5-Trimethylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,3-Dichlorobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,3-Dichloropropane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,4-Dichlorobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
1,4-Dioxane	ND (0.0476)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
2,2-Dichloropropane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
2-Butanone	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
2-Chlorotoluene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
2-Hexanone	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
4-Chlorotoluene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
4-Isopropyltoluene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
4-Methyl-2-Pentanone	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Acetone	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Benzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Bromobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Bromochloromethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 12.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Bromoform	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Bromomethane	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Carbon Disulfide	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Carbon Tetrachloride	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Chlorobenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Chloroethane	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Chloroform	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Chloromethane	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
cis-1,2-Dichloroethene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
cis-1,3-Dichloropropene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Dibromochloromethane	ND (0.0010)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Dibromomethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Dichlorodifluoromethane	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Diethyl Ether	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Di-isopropyl ether	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Ethyl tertiary-butyl ether	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Ethylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Hexachlorobutadiene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Isopropylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Methyl tert-Butyl Ether	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Methylene Chloride	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Naphthalene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
n-Butylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
n-Propylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
sec-Butylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Styrene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
tert-Butylbenzene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Tertiary-amyl methyl ether	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Tetrachloroethene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Tetrahydrofuran	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Toluene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 12.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
trans-1,3-Dichloropropene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Trichloroethene	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Trichlorofluoromethane	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Vinyl Chloride	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Xylene O	ND (0.0024)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Xylene P,M	ND (0.0048)		8260B Low		1	03/18/20 21:31	D0C0330	DC01838
Xylenes (Total)	ND (0.00476)		8260B Low		1	03/18/20 21:31		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>91 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>88 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>92 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>99 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 19.7
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DMC
Prepared: 3/17/20 14:30

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1221	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1232	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1242	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1248	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1254	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1260	192 (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1262	ND (29.5)		8082A		500	03/20/20 9:35		DC01701
Aroclor 1268	ND (29.5)		8082A		500	03/20/20 9:35		DC01701

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	%	SD	30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	%	SD	30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	%	SD	30-150



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	0.858 (0.771)		8270D		2	03/19/20 2:21	D0C0312	DC01610
1,2-Dichlorobenzene	ND (0.771)		8270D		2	03/19/20 2:21	D0C0312	DC01610
1,3-Dichlorobenzene	ND (0.369)		8270D		2	03/19/20 2:21	D0C0312	DC01610
1,4-Dichlorobenzene	ND (0.388)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4,5-Trichlorophenol	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4,6-Trichlorophenol	ND (0.378)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4-Dichlorophenol	ND (0.383)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4-Dimethylphenol	ND (0.346)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4-Dinitrophenol	ND (2.57)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,4-Dinitrotoluene	ND (0.494)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2,6-Dinitrotoluene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2-Chloronaphthalene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2-Chlorophenol	ND (0.434)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2-Methylnaphthalene	ND (0.332)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2-Methylphenol	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
2-Nitrophenol	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
3,3'-Dichlorobenzidine	ND (0.341)		8270D		2	03/19/20 2:21	D0C0312	DC01610
3+4-Methylphenol	ND (3.08)		8270D		2	03/19/20 2:21	D0C0312	DC01610
4-Bromophenyl-phenylether	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
4-Chloroaniline	ND (0.346)		8270D		2	03/19/20 2:21	D0C0312	DC01610
4-Nitrophenol	ND (7.71)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Acenaphthene	ND (0.374)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Acenaphthylene	ND (0.295)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Acetophenone	ND (3.08)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Aniline	ND (7.71)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Anthracene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Azobenzene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Benzo(a)anthracene	1.43 (0.268)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Benzo(a)pyrene	1.50 (0.254)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Benzo(b)fluoranthene	1.32 (0.341)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Benzo(g,h,i)perylene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Benzo(k)fluoranthene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
bis(2-Chloroethyl)ether	ND (0.415)		8270D		2	03/19/20 2:21	D0C0312	DC01610
bis(2-chloroisopropyl)Ether	ND (0.411)		8270D		2	03/19/20 2:21	D0C0312	DC01610
bis(2-Ethylhexyl)phthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Butylbenzylphthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Chrysene	1.34 (0.771)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Dibenzo(a,h)Anthracene	0.260 (0.235)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Dibenzofuran	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Diethylphthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Dimethylphthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Di-n-butylphthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Di-n-octylphthalate	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Fluoranthene	2.99 (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Fluorene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Hexachlorobenzene	ND (0.258)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Hexachlorobutadiene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Hexachloroethane	ND (0.388)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Indeno(1,2,3-cd)Pyrene	0.800 (0.498)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Isophorone	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Naphthalene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Nitrobenzene	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
N-Nitrosodimethylamine	ND (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Pentachlorophenol	ND (1.33)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Phenanthrene	2.84 (0.383)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Phenol	ND (0.374)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Pyrene	2.71 (1.54)		8270D		2	03/19/20 2:21	D0C0312	DC01610
Pyridine	ND (7.71)		8270D		2	03/19/20 2:21	D0C0312	DC01610

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	44 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	72 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	52 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 15.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 3/16/20 10:55

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
<i>Surrogate: 2-Fluorobiphenyl</i>		64 %		30-130				
<i>Surrogate: 2-Fluorophenol</i>		51 %		30-130				
<i>Surrogate: Nitrobenzene-d5</i>		48 %		30-130				
<i>Surrogate: Phenol-d6</i>		57 %		30-130				
<i>Surrogate: p-Terphenyl-d14</i>		83 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Corrosivity (pH)	7.73 (N/A)		9045		1	DEL	03/13/20 20:45	S.U.	DC01329
Corrosivity (pH) Sample Temp	Soil pH measured in water at 19.1 °C.								
Flashpoint	> 200 (N/A)		1010		1	CCP	03/18/20 16:45	°F	DC01829
Reactive Cyanide	ND (2.0)		7.3.3.2		1	EEM	03/18/20 11:11	mg/kg	DC01819
Reactive Sulfide	ND (2.0)		7.3.4.1		1	EEM	03/18/20 11:11	mg/kg	DC01819



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation
Client Sample ID: 1802441-Lot2-DISP02
Date Sampled: 03/13/20 09:55
Percent Solids: 86
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 20C0468
ESS Laboratory Sample ID: 20C0468-02
Sample Matrix: Soil
Units: °C
Analyst: MKS
Prepared: 3/19/20 16:45

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	20.3 (N/A)		1311		1	MKS	03/20/20 9:12	DC01952
Temperature (Max C)	21.1 (N/A)		1311		1	MKS	03/20/20 9:12	DC01952
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch DC01641 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet
Barium	ND	2.50	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.00	mg/kg wet
Lead	ND	5.00	mg/kg wet
Selenium	ND	5.00	mg/kg wet
Silver	ND	0.50	mg/kg wet

LCS

Arsenic	196	6.76	mg/kg wet	202.0	97	80-120
Barium	345	6.76	mg/kg wet	343.0	101	80-120
Cadmium	135	1.35	mg/kg wet	149.0	90	80-120
Chromium	180	2.70	mg/kg wet	182.0	99	80-120
Lead	334	13.5	mg/kg wet	333.0	100	80-120
Selenium	165	13.5	mg/kg wet	169.0	98	80-120
Silver	47.2	1.35	mg/kg wet	48.90	97	80-120

LCS Dup

Arsenic	185	7.25	mg/kg wet	202.0	92	80-120	6	20
Barium	321	7.25	mg/kg wet	343.0	94	80-120	7	20
Cadmium	128	1.45	mg/kg wet	149.0	86	80-120	5	20
Chromium	171	2.90	mg/kg wet	182.0	94	80-120	5	20
Lead	314	14.5	mg/kg wet	333.0	94	80-120	6	20
Selenium	157	14.5	mg/kg wet	169.0	93	80-120	5	20
Silver	45.1	1.45	mg/kg wet	48.90	92	80-120	5	20

Batch DC01643 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet
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LCS

Mercury	9.60	0.550	mg/kg wet	7.760	124	71-125
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LCS Dup

Mercury	9.15	0.574	mg/kg wet	7.760	118	71-125	5	20
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1311 TCLP Metals

Batch DC02020 - 3005A_TCLP

Blank

Lead	ND	0.050	mg/L
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LCS

Lead	0.485	0.050	mg/L	0.5000	97	80-120
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LCS Dup

Lead	0.479	0.050	mg/L	0.5000	96	80-120	1	20
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Batch DC02426 - 3005A_TCLP

Blank



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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1311 TCLP Metals

Batch DC02426 - 3005A_TCLP

Lead	ND	0.050	mg/L							
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LCS

Lead	0.478	0.050	mg/L	0.5000		96	80-120			
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LCS Dup

Lead	0.458	0.050	mg/L	0.5000		92	80-120	4	20	
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	0.0292	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: 4-Bromofluorobenzene	0.0448		mg/kg wet	0.05000		90	70-130			
Surrogate: Dibromofluoromethane	0.0463		mg/kg wet	0.05000		93	70-130			
Surrogate: Toluene-d8	0.0499		mg/kg wet	0.05000		100	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
1,1,1-Trichloroethane	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
1,1,2,2-Tetrachloroethane	0.0459	0.0020	mg/kg wet	0.05000		92	70-130			
1,1,2-Trichloroethane	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

1,1-Dichloroethane	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
1,1-Dichloroethene	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
1,1-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,3-Trichlorobenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
1,2,3-Trichloropropane	0.0421	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,4-Trichlorobenzene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,4-Trimethylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,2-Dibromo-3-Chloropropane	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
1,2-Dibromoethane	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
1,2-Dichlorobenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichloroethane	0.0449	0.0050	mg/kg wet	0.05000		90	70-130			
1,2-Dichloropropane	0.0419	0.0050	mg/kg wet	0.05000		84	70-130			
1,3,5-Trimethylbenzene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
1,3-Dichlorobenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,3-Dichloropropane	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
1,4-Dichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,4-Dioxane	0.858	0.100	mg/kg wet	1.000		86	70-130			
2,2-Dichloropropane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
2-Butanone	0.201	0.0100	mg/kg wet	0.2500		80	70-130			
2-Chlorotoluene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
2-Hexanone	0.214	0.0100	mg/kg wet	0.2500		86	70-130			
4-Chlorotoluene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
4-Isopropyltoluene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
4-Methyl-2-Pentanone	0.208	0.0100	mg/kg wet	0.2500		83	70-130			
Acetone	0.174	0.0100	mg/kg wet	0.2500		70	70-130			
Benzene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
Bromobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Bromochloromethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Bromoform	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
Bromomethane	0.0398	0.0100	mg/kg wet	0.05000		80	70-130			
Carbon Disulfide	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Carbon Tetrachloride	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chlorobenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Chloroethane	0.0373	0.0100	mg/kg wet	0.05000		75	70-130			
Chloroform	0.0443	0.0050	mg/kg wet	0.05000		89	70-130			
Chloromethane	0.0369	0.0100	mg/kg wet	0.05000		74	70-130			
cis-1,2-Dichloroethene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
cis-1,3-Dichloropropene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
Dibromochloromethane	0.0452	0.0020	mg/kg wet	0.05000		90	70-130			
Dibromomethane	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
Dichlorodifluoromethane	0.0454	0.0100	mg/kg wet	0.05000		91	70-130			
Diethyl Ether	0.0412	0.0050	mg/kg wet	0.05000		82	70-130			
Di-isopropyl ether	0.0402	0.0050	mg/kg wet	0.05000		80	70-130			
Ethyl tertiary-butyl ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Ethylbenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Hexachlorobutadiene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Isopropylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
Methyl tert-Butyl Ether	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Methylene Chloride	0.0463	0.0100	mg/kg wet	0.05000		93	70-130			
Naphthalene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
n-Butylbenzene	0.0398	0.0050	mg/kg wet	0.05000		80	70-130			
n-Propylbenzene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
sec-Butylbenzene	0.0462	0.0050	mg/kg wet	0.05000		92	70-130			
Styrene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
tert-Butylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Tertiary-amyl methyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Tetrahydrofuran	0.0374	0.0050	mg/kg wet	0.05000		75	70-130			
Toluene	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
trans-1,2-Dichloroethene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
trans-1,3-Dichloropropene	0.0424	0.0050	mg/kg wet	0.05000		85	70-130			
Trichloroethene	0.0442	0.0050	mg/kg wet	0.05000		88	70-130			
Trichlorofluoromethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Vinyl Chloride	0.0368	0.0100	mg/kg wet	0.05000		74	70-130			
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Xylene P,M	0.0946	0.0100	mg/kg wet	0.1000		95	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0472		mg/kg wet	0.05000		94	70-130			
Surrogate: 4-Bromofluorobenzene	0.0484		mg/kg wet	0.05000		97	70-130			
Surrogate: Dibromofluoromethane	0.0482		mg/kg wet	0.05000		96	70-130			
Surrogate: Toluene-d8	0.0469		mg/kg wet	0.05000		94	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
1,1,1-Trichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
1,1,2,2-Tetrachloroethane	0.0495	0.0020	mg/kg wet	0.05000		99	70-130	8	20	
1,1,2-Trichloroethane	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
1,1-Dichloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	10	20	
1,1-Dichloroethene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,1-Dichloropropene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,3-Trichlorobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,2,3-Trichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	9	20	
1,2,4-Trichlorobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
1,2,4-Trimethylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	9	20	
1,2-Dibromo-3-Chloropropane	0.0436	0.0050	mg/kg wet	0.05000		87	70-130	8	20	
1,2-Dibromoethane	0.0527	0.0050	mg/kg wet	0.05000		105	70-130	12	20	
1,2-Dichlorobenzene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	6	20	
1,2-Dichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	9	20	
1,2-Dichloropropane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	8	20	
1,3,5-Trimethylbenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
1,3-Dichlorobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	6	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

1,3-Dichloropropane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	12	20	
1,4-Dichlorobenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
1,4-Dioxane	0.904	0.100	mg/kg wet	1.000		90	70-130	5	20	
2,2-Dichloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	8	20	
2-Butanone	0.222	0.0100	mg/kg wet	0.2500		89	70-130	10	20	
2-Chlorotoluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	6	20	
2-Hexanone	0.249	0.0100	mg/kg wet	0.2500		100	70-130	15	20	
4-Chlorotoluene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	7	20	
4-Isopropyltoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	9	20	
4-Methyl-2-Pentanone	0.230	0.0100	mg/kg wet	0.2500		92	70-130	10	20	
Acetone	0.216	0.0100	mg/kg wet	0.2500		86	70-130	21	20	D+
Benzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	9	20	
Bromobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	7	20	
Bromochloromethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Bromodichloromethane	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	9	20	
Bromoform	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Bromomethane	0.0492	0.0100	mg/kg wet	0.05000		98	70-130	21	20	D+
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Carbon Tetrachloride	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	9	20	
Chlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	11	20	
Chloroethane	0.0413	0.0100	mg/kg wet	0.05000		83	70-130	10	20	
Chloroform	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	10	20	
Chloromethane	0.0412	0.0100	mg/kg wet	0.05000		82	70-130	11	20	
cis-1,2-Dichloroethene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	9	20	
cis-1,3-Dichloropropene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	8	20	
Dibromochloromethane	0.0509	0.0020	mg/kg wet	0.05000		102	70-130	12	20	
Dibromomethane	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
Dichlorodifluoromethane	0.0506	0.0100	mg/kg wet	0.05000		101	70-130	11	20	
Diethyl Ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	8	20	
Di-isopropyl ether	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	10	20	
Ethyl tertiary-butyl ether	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	9	20	
Ethylbenzene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	10	20	
Hexachlorobutadiene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Isopropylbenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	7	20	
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	7	20	
Methylene Chloride	0.0483	0.0100	mg/kg wet	0.05000		97	70-130	4	20	
Naphthalene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	15	20	
n-Butylbenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130	13	20	
n-Propylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	8	20	
sec-Butylbenzene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
Styrene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	12	20	
tert-Butylbenzene	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	8	20	
Tertiary-amyl methyl ether	0.0600	0.0050	mg/kg wet	0.05000		120	70-130	8	20	
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	13	20	
Tetrahydrofuran	0.0425	0.0050	mg/kg wet	0.05000		85	70-130	13	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch DC01838 - 5035

Toluene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
trans-1,2-Dichloroethene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	10	20	
trans-1,3-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
Trichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	11	20	
Trichlorofluoromethane	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	8	20	
Vinyl Chloride	0.0415	0.0100	mg/kg wet	0.05000		83	70-130	12	20	
Xylene O	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	10	20	
Xylene P,M	0.105	0.0100	mg/kg wet	0.1000		105	70-130	10	20	
Surrogate: 1,2-Dichloroethane-d4	0.0471		mg/kg wet	0.05000		94	70-130			
Surrogate: 4-Bromofluorobenzene	0.0493		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0481		mg/kg wet	0.05000		96	70-130			
Surrogate: Toluene-d8	0.0485		mg/kg wet	0.05000		97	70-130			

5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Blank										
1,1,1,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,1-Trichloroethane	ND	0.200	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,2-Trichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethene	ND	0.200	mg/kg wet							
1,1-Dichloropropene	ND	0.200	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,3-Trichloropropane	ND	0.200	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.200	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	1.00	mg/kg wet							
1,2-Dibromoethane	ND	0.200	mg/kg wet							
1,2-Dichlorobenzene	ND	0.200	mg/kg wet							
1,2-Dichloroethane	ND	0.200	mg/kg wet							
1,2-Dichloropropane	ND	0.200	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.200	mg/kg wet							
1,3-Dichlorobenzene	ND	0.200	mg/kg wet							
1,3-Dichloropropane	ND	0.200	mg/kg wet							
1,4-Dichlorobenzene	ND	0.200	mg/kg wet							
1,4-Dioxane - Screen	ND	40.0	mg/kg wet							
2,2-Dichloropropane	ND	0.200	mg/kg wet							
2-Butanone	ND	1.00	mg/kg wet							
2-Chlorotoluene	ND	0.200	mg/kg wet							
2-Hexanone	ND	1.00	mg/kg wet							
4-Chlorotoluene	ND	0.200	mg/kg wet							
4-Isopropyltoluene	ND	0.200	mg/kg wet							
4-Methyl-2-Pentanone	ND	1.00	mg/kg wet							
Acetone	ND	1.00	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

Benzene	ND	0.200	mg/kg wet							
Bromobenzene	ND	0.200	mg/kg wet							
Bromochloromethane	ND	0.200	mg/kg wet							
Bromodichloromethane	ND	0.200	mg/kg wet							
Bromoform	ND	0.200	mg/kg wet							
Bromomethane	ND	0.200	mg/kg wet							
Carbon Disulfide	ND	0.200	mg/kg wet							
Carbon Tetrachloride	ND	0.200	mg/kg wet							
Chlorobenzene	ND	0.200	mg/kg wet							
Chloroethane	ND	0.200	mg/kg wet							
Chloroform	ND	0.200	mg/kg wet							
Chloromethane	ND	0.200	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.200	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.200	mg/kg wet							
Dibromochloromethane	ND	0.200	mg/kg wet							
Dibromomethane	ND	0.200	mg/kg wet							
Dichlorodifluoromethane	ND	0.200	mg/kg wet							
Diethyl Ether	ND	0.200	mg/kg wet							
Di-isopropyl ether	ND	0.200	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.200	mg/kg wet							
Ethylbenzene	ND	0.200	mg/kg wet							
Hexachlorobutadiene	ND	0.200	mg/kg wet							
Isopropylbenzene	ND	0.200	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.200	mg/kg wet							
Methylene Chloride	ND	0.400	mg/kg wet							
Naphthalene	ND	0.200	mg/kg wet							
n-Butylbenzene	ND	0.200	mg/kg wet							
n-Propylbenzene	ND	0.200	mg/kg wet							
sec-Butylbenzene	ND	0.200	mg/kg wet							
Styrene	ND	0.200	mg/kg wet							
tert-Butylbenzene	ND	0.200	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.200	mg/kg wet							
Tetrachloroethene	ND	0.200	mg/kg wet							
Tetrahydrofuran	ND	1.00	mg/kg wet							
Toluene	ND	0.200	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.200	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.200	mg/kg wet							
Trichloroethene	ND	0.200	mg/kg wet							
Trichlorofluoromethane	ND	0.200	mg/kg wet							
Vinyl Chloride	ND	0.200	mg/kg wet							
Xylene O	ND	0.200	mg/kg wet							
Xylene P,M	ND	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	4.93		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.53		mg/kg wet	5.000		91	70-130			
Surrogate: Dibromofluoromethane	4.73		mg/kg wet	5.000		95	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

<i>Surrogate: Toluene-d8</i>	4.73		mg/kg wet	5.000		95	70-130			
LCS										
1,1,1,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,1-Trichloroethane	1.84	0.200	mg/kg wet	2.000		92	70-130			
1,1,2,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,2-Trichloroethane	1.82	0.200	mg/kg wet	2.000		91	70-130			
1,1-Dichloroethane	1.75	0.200	mg/kg wet	2.000		87	70-130			
1,1-Dichloroethene	1.71	0.200	mg/kg wet	2.000		86	70-130			
1,1-Dichloropropene	1.87	0.200	mg/kg wet	2.000		93	70-130			
1,2,3-Trichlorobenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,2,3-Trichloropropane	1.95	0.200	mg/kg wet	2.000		97	70-130			
1,2,4-Trichlorobenzene	1.97	0.200	mg/kg wet	2.000		99	70-130			
1,2,4-Trimethylbenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,2-Dibromo-3-Chloropropane	1.62	1.00	mg/kg wet	2.000		81	70-130			
1,2-Dibromoethane	2.02	0.200	mg/kg wet	2.000		101	70-130			
1,2-Dichlorobenzene	1.94	0.200	mg/kg wet	2.000		97	70-130			
1,2-Dichloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,2-Dichloropropane	1.79	0.200	mg/kg wet	2.000		90	70-130			
1,3,5-Trimethylbenzene	1.91	0.200	mg/kg wet	2.000		95	70-130			
1,3-Dichlorobenzene	1.95	0.200	mg/kg wet	2.000		98	70-130			
1,3-Dichloropropane	2.06	0.200	mg/kg wet	2.000		103	70-130			
1,4-Dichlorobenzene	2.01	0.200	mg/kg wet	2.000		101	70-130			
1,4-Dioxane - Screen	56.0	40.0	mg/kg wet	40.00		140	44-241			
2,2-Dichloropropane	1.83	0.200	mg/kg wet	2.000		92	70-130			
2-Butanone	9.52	1.00	mg/kg wet	10.00		95	70-130			
2-Chlorotoluene	1.91	0.200	mg/kg wet	2.000		96	70-130			
2-Hexanone	8.95	1.00	mg/kg wet	10.00		90	70-130			
4-Chlorotoluene	1.94	0.200	mg/kg wet	2.000		97	70-130			
4-Isopropyltoluene	1.94	0.200	mg/kg wet	2.000		97	70-130			
4-Methyl-2-Pentanone	9.26	1.00	mg/kg wet	10.00		93	70-130			
Acetone	9.55	1.00	mg/kg wet	10.00		95	70-130			
Benzene	1.84	0.200	mg/kg wet	2.000		92	70-130			
Bromobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130			
Bromochloromethane	1.87	0.200	mg/kg wet	2.000		93	70-130			
Bromodichloromethane	1.80	0.200	mg/kg wet	2.000		90	70-130			
Bromoform	1.54	0.200	mg/kg wet	2.000		77	70-130			
Bromomethane	1.87	0.200	mg/kg wet	2.000		94	70-130			
Carbon Disulfide	1.88	0.200	mg/kg wet	2.000		94	70-130			
Carbon Tetrachloride	1.94	0.200	mg/kg wet	2.000		97	70-130			
Chlorobenzene	1.97	0.200	mg/kg wet	2.000		98	70-130			
Chloroethane	1.74	0.200	mg/kg wet	2.000		87	70-130			
Chloroform	1.82	0.200	mg/kg wet	2.000		91	70-130			
Chloromethane	1.87	0.200	mg/kg wet	2.000		94	70-130			
cis-1,2-Dichloroethene	1.76	0.200	mg/kg wet	2.000		88	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

cis-1,3-Dichloropropene	1.93	0.200	mg/kg wet	2.000		96	70-130			
Dibromochloromethane	1.66	0.200	mg/kg wet	2.000		83	70-130			
Dibromomethane	1.75	0.200	mg/kg wet	2.000		88	70-130			
Dichlorodifluoromethane	1.85	0.200	mg/kg wet	2.000		92	70-130			
Diethyl Ether	1.80	0.200	mg/kg wet	2.000		90	70-130			
Di-isopropyl ether	1.79	0.200	mg/kg wet	2.000		90	70-130			
Ethyl tertiary-butyl ether	1.71	0.200	mg/kg wet	2.000		85	70-130			
Ethylbenzene	1.93	0.200	mg/kg wet	2.000		97	70-130			
Hexachlorobutadiene	2.44	0.200	mg/kg wet	2.000		122	70-130			
Isopropylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130			
Methyl tert-Butyl Ether	1.79	0.200	mg/kg wet	2.000		90	70-130			
Methylene Chloride	1.87	0.400	mg/kg wet	2.000		93	70-130			
Naphthalene	1.95	0.200	mg/kg wet	2.000		97	70-130			
n-Butylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130			
n-Propylbenzene	1.93	0.200	mg/kg wet	2.000		96	70-130			
sec-Butylbenzene	1.89	0.200	mg/kg wet	2.000		94	70-130			
Styrene	1.88	0.200	mg/kg wet	2.000		94	70-130			
tert-Butylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130			
Tertiary-amyl methyl ether	1.87	0.200	mg/kg wet	2.000		94	70-130			
Tetrachloroethene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Tetrahydrofuran	1.59	1.00	mg/kg wet	2.000		79	70-130			
Toluene	1.76	0.200	mg/kg wet	2.000		88	70-130			
trans-1,2-Dichloroethene	1.86	0.200	mg/kg wet	2.000		93	70-130			
trans-1,3-Dichloropropene	1.60	0.200	mg/kg wet	2.000		80	70-130			
Trichloroethene	1.89	0.200	mg/kg wet	2.000		94	70-130			
Trichlorofluoromethane	2.09	0.200	mg/kg wet	2.000		105	70-130			
Vinyl Chloride	1.73	0.200	mg/kg wet	2.000		87	70-130			
Xylene O	1.92	0.200	mg/kg wet	2.000		96	70-130			
Xylene P,M	3.81	0.400	mg/kg wet	4.000		95	70-130			
Surrogate: 1,2-Dichloroethane-d4	4.93		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.94		mg/kg wet	5.000		99	70-130			
Surrogate: Dibromofluoromethane	5.01		mg/kg wet	5.000		100	70-130			
Surrogate: Toluene-d8	4.95		mg/kg wet	5.000		99	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	1.80	0.200	mg/kg wet	2.000		90	70-130	4	20	
1,1,1-Trichloroethane	1.75	0.200	mg/kg wet	2.000		88	70-130	5	20	
1,1,2,2-Tetrachloroethane	1.83	0.200	mg/kg wet	2.000		92	70-130	3	20	
1,1,2-Trichloroethane	1.78	0.200	mg/kg wet	2.000		89	70-130	2	20	
1,1-Dichloroethane	1.76	0.200	mg/kg wet	2.000		88	70-130	0.5	20	
1,1-Dichloroethene	1.75	0.200	mg/kg wet	2.000		88	70-130	2	20	
1,1-Dichloropropene	1.83	0.200	mg/kg wet	2.000		92	70-130	2	20	
1,2,3-Trichlorobenzene	1.88	0.200	mg/kg wet	2.000		94	70-130	5	20	
1,2,3-Trichloropropane	1.85	0.200	mg/kg wet	2.000		93	70-130	5	20	
1,2,4-Trichlorobenzene	1.87	0.200	mg/kg wet	2.000		93	70-130	6	20	
1,2,4-Trimethylbenzene	1.95	0.200	mg/kg wet	2.000		98	70-130	1	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch DC02018 - 5035										
1,2-Dibromo-3-Chloropropane	1.53	1.00	mg/kg wet	2.000		76	70-130	6	20	
1,2-Dibromoethane	1.86	0.200	mg/kg wet	2.000		93	70-130	8	20	
1,2-Dichlorobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	3	20	
1,2-Dichloroethane	1.85	0.200	mg/kg wet	2.000		92	70-130	2	20	
1,2-Dichloropropane	1.74	0.200	mg/kg wet	2.000		87	70-130	3	20	
1,3,5-Trimethylbenzene	1.86	0.200	mg/kg wet	2.000		93	70-130	2	20	
1,3-Dichlorobenzene	2.01	0.200	mg/kg wet	2.000		100	70-130	3	20	
1,3-Dichloropropane	1.94	0.200	mg/kg wet	2.000		97	70-130	6	20	
1,4-Dichlorobenzene	1.99	0.200	mg/kg wet	2.000		100	70-130	1	20	
1,4-Dioxane - Screen	42.9	40.0	mg/kg wet	40.00		107	44-241	26	200	
2,2-Dichloropropane	1.83	0.200	mg/kg wet	2.000		91	70-130	0.3	20	
2-Butanone	9.10	1.00	mg/kg wet	10.00		91	70-130	5	20	
2-Chlorotoluene	2.01	0.200	mg/kg wet	2.000		101	70-130	5	20	
2-Hexanone	8.59	1.00	mg/kg wet	10.00		86	70-130	4	20	
4-Chlorotoluene	1.98	0.200	mg/kg wet	2.000		99	70-130	2	20	
4-Isopropyltoluene	1.89	0.200	mg/kg wet	2.000		94	70-130	3	20	
4-Methyl-2-Pentanone	8.55	1.00	mg/kg wet	10.00		86	70-130	8	20	
Acetone	8.00	1.00	mg/kg wet	10.00		80	70-130	18	20	
Benzene	1.90	0.200	mg/kg wet	2.000		95	70-130	3	20	
Bromobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	0	20	
Bromochloromethane	1.86	0.200	mg/kg wet	2.000		93	70-130	0.3	20	
Bromodichloromethane	1.79	0.200	mg/kg wet	2.000		89	70-130	0.6	20	
Bromoform	1.40	0.200	mg/kg wet	2.000		70	70-130	9	20	
Bromomethane	1.97	0.200	mg/kg wet	2.000		98	70-130	5	20	
Carbon Disulfide	1.87	0.200	mg/kg wet	2.000		93	70-130	0.4	20	
Carbon Tetrachloride	1.85	0.200	mg/kg wet	2.000		92	70-130	5	20	
Chlorobenzene	1.96	0.200	mg/kg wet	2.000		98	70-130	0.5	20	
Chloroethane	1.90	0.200	mg/kg wet	2.000		95	70-130	8	20	
Chloroform	1.91	0.200	mg/kg wet	2.000		96	70-130	5	20	
Chloromethane	1.83	0.200	mg/kg wet	2.000		92	70-130	2	20	
cis-1,2-Dichloroethene	1.76	0.200	mg/kg wet	2.000		88	70-130	0.1	20	
cis-1,3-Dichloropropene	1.98	0.200	mg/kg wet	2.000		99	70-130	3	20	
Dibromochloromethane	1.73	0.200	mg/kg wet	2.000		87	70-130	4	20	
Dibromomethane	1.74	0.200	mg/kg wet	2.000		87	70-130	0.9	20	
Dichlorodifluoromethane	1.87	0.200	mg/kg wet	2.000		94	70-130	1	20	
Diethyl Ether	1.87	0.200	mg/kg wet	2.000		93	70-130	3	20	
Di-isopropyl ether	1.82	0.200	mg/kg wet	2.000		91	70-130	1	20	
Ethyl tertiary-butyl ether	1.67	0.200	mg/kg wet	2.000		84	70-130	2	20	
Ethylbenzene	1.89	0.200	mg/kg wet	2.000		94	70-130	2	20	
Hexachlorobutadiene	2.17	0.200	mg/kg wet	2.000		108	70-130	12	20	
Isopropylbenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	2	20	
Methyl tert-Butyl Ether	1.71	0.200	mg/kg wet	2.000		86	70-130	4	20	
Methylene Chloride	1.88	0.400	mg/kg wet	2.000		94	70-130	0.6	20	
Naphthalene	1.81	0.200	mg/kg wet	2.000		90	70-130	7	20	
n-Butylbenzene	1.88	0.200	mg/kg wet	2.000		94	70-130	1	20	



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch DC02018 - 5035

n-Propylbenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	1	20	
sec-Butylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130	0.5	20	
Styrene	1.91	0.200	mg/kg wet	2.000		95	70-130	2	20	
tert-Butylbenzene	1.97	0.200	mg/kg wet	2.000		98	70-130	1	20	
Tertiary-amyl methyl ether	1.73	0.200	mg/kg wet	2.000		87	70-130	8	20	
Tetrachloroethene	1.96	0.200	mg/kg wet	2.000		98	70-130	0.8	20	
Tetrahydrofuran	1.74	1.00	mg/kg wet	2.000		87	70-130	9	20	
Toluene	1.83	0.200	mg/kg wet	2.000		92	70-130	4	20	
trans-1,2-Dichloroethene	1.85	0.200	mg/kg wet	2.000		92	70-130	0.5	20	
trans-1,3-Dichloropropene	1.55	0.200	mg/kg wet	2.000		77	70-130	4	20	
Trichloroethene	1.82	0.200	mg/kg wet	2.000		91	70-130	4	20	
Trichlorofluoromethane	1.95	0.200	mg/kg wet	2.000		97	70-130	7	20	
Vinyl Chloride	1.70	0.200	mg/kg wet	2.000		85	70-130	2	20	
Xylene O	1.96	0.200	mg/kg wet	2.000		98	70-130	2	20	
Xylene P,M	3.88	0.400	mg/kg wet	4.000		97	70-130	2	20	
Surrogate: 1,2-Dichloroethane-d4	4.95		mg/kg wet	5.000		99	70-130			
Surrogate: 4-Bromofluorobenzene	4.68		mg/kg wet	5.000		94	70-130			
Surrogate: Dibromofluoromethane	4.97		mg/kg wet	5.000		99	70-130			
Surrogate: Toluene-d8	4.98		mg/kg wet	5.000		100	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch DC01701 - 3540C

Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0192		mg/kg wet	0.02500		77	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0184		mg/kg wet	0.02500		74	30-150			
Surrogate: Tetrachloro-m-xylene	0.0169		mg/kg wet	0.02500		68	30-150			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch DC01701 - 3540C

<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0194		mg/kg wet	0.02500		78	30-150			
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LCS

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		89	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			

<i>Surrogate: Decachlorobiphenyl</i>	0.0225		mg/kg wet	0.02500		90	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0216		mg/kg wet	0.02500		86	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0207		mg/kg wet	0.02500		83	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0223		mg/kg wet	0.02500		89	30-150			

LCS Dup

Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		82	40-140	5	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		85	40-140	1	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		87	40-140	2	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		83	40-140	4	30	

<i>Surrogate: Decachlorobiphenyl</i>	0.0220		mg/kg wet	0.02500		88	30-150			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0209		mg/kg wet	0.02500		84	30-150			
<i>Surrogate: Tetrachloro-m-xylene</i>	0.0203		mg/kg wet	0.02500		81	30-150			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	0.0222		mg/kg wet	0.02500		89	30-150			

8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.167	mg/kg wet							
1,2-Dichlorobenzene	ND	0.167	mg/kg wet							
1,3-Dichlorobenzene	ND	0.080	mg/kg wet							
1,4-Dichlorobenzene	ND	0.084	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.082	mg/kg wet							
2,4-Dichlorophenol	ND	0.083	mg/kg wet							
2,4-Dimethylphenol	ND	0.075	mg/kg wet							
2,4-Dinitrophenol	ND	0.557	mg/kg wet							
2,4-Dinitrotoluene	ND	0.107	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.094	mg/kg wet							
2-Methylnaphthalene	ND	0.072	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3'-Dichlorobenzidine	ND	0.074	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

4-Chloroaniline	ND	0.075	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.081	mg/kg wet							
Acenaphthylene	ND	0.064	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzo(a)anthracene	ND	0.058	mg/kg wet							
Benzo(a)pyrene	ND	0.055	mg/kg wet							
Benzo(b)fluoranthene	ND	0.074	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.090	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.089	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.051	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.056	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.084	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.108	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	0.288	mg/kg wet							
Phenanthrene	ND	0.083	mg/kg wet							
Phenol	ND	0.081	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.49		mg/kg wet	3.333		75	30-130			
Surrogate: 2,4,6-Tribromophenol	4.08		mg/kg wet	5.000		82	30-130			
Surrogate: 2-Chlorophenol-d4	3.85		mg/kg wet	5.000		77	30-130			
Surrogate: 2-Fluorobiphenyl	2.51		mg/kg wet	3.333		75	30-130			
Surrogate: 2-Fluorophenol	3.86		mg/kg wet	5.000		77	30-130			
Surrogate: Nitrobenzene-d5	2.73		mg/kg wet	3.333		82	30-130			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0468

Quality Control Data

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8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

Surrogate: Phenol-d6	3.96		mg/kg wet	5.000		79	30-130			
Surrogate: p-Terphenyl-d14	3.32		mg/kg wet	3.333		99	30-130			

LCS

1,2,4-Trichlorobenzene	2.08	0.167	mg/kg wet	3.333		62	40-140			
1,2-Dichlorobenzene	2.04	0.167	mg/kg wet	3.333		61	40-140			
1,3-Dichlorobenzene	2.01	0.080	mg/kg wet	3.333		60	40-140			
1,4-Dichlorobenzene	2.03	0.084	mg/kg wet	3.333		61	40-140			
2,4,5-Trichlorophenol	2.78	0.333	mg/kg wet	3.333		84	30-130			
2,4,6-Trichlorophenol	2.64	0.082	mg/kg wet	3.333		79	30-130			
2,4-Dichlorophenol	2.44	0.083	mg/kg wet	3.333		73	30-130			
2,4-Dimethylphenol	2.49	0.075	mg/kg wet	3.333		75	30-130			
2,4-Dinitrophenol	3.46	0.557	mg/kg wet	3.333		104	30-130			
2,4-Dinitrotoluene	3.15	0.107	mg/kg wet	3.333		94	40-140			
2,6-Dinitrotoluene	2.73	0.333	mg/kg wet	3.333		82	40-140			
2-Chloronaphthalene	2.28	0.333	mg/kg wet	3.333		69	40-140			
2-Chlorophenol	2.24	0.094	mg/kg wet	3.333		67	30-130			
2-Methylnaphthalene	2.20	0.072	mg/kg wet	3.333		66	40-140			
2-Methylphenol	2.31	0.333	mg/kg wet	3.333		69	30-130			
2-Nitrophenol	2.29	0.333	mg/kg wet	3.333		69	30-130			
3,3'-Dichlorobenzidine	2.60	0.074	mg/kg wet	3.333		78	40-140			
3+4-Methylphenol	4.59	0.667	mg/kg wet	6.667		69	30-130			
4-Bromophenyl-phenylether	2.74	0.333	mg/kg wet	3.333		82	40-140			
4-Chloroaniline	1.51	0.075	mg/kg wet	3.333		45	40-140			
4-Nitrophenol	3.37	1.67	mg/kg wet	3.333		101	30-130			
Acenaphthene	2.44	0.081	mg/kg wet	3.333		73	40-140			
Acenaphthylene	2.25	0.064	mg/kg wet	3.333		68	40-140			
Acetophenone	2.08	0.667	mg/kg wet	3.333		62	40-140			
Aniline	1.73	1.67	mg/kg wet	3.333		52	40-140			
Anthracene	2.85	0.333	mg/kg wet	3.333		85	40-140			
Azobenzene	2.87	0.333	mg/kg wet	3.333		86	40-140			
Benzo(a)anthracene	3.04	0.058	mg/kg wet	3.333		91	40-140			
Benzo(a)pyrene	3.29	0.055	mg/kg wet	3.333		99	40-140			
Benzo(b)fluoranthene	3.19	0.074	mg/kg wet	3.333		96	40-140			
Benzo(g,h,i)perylene	3.19	0.333	mg/kg wet	3.333		96	40-140			
Benzo(k)fluoranthene	2.99	0.333	mg/kg wet	3.333		90	40-140			
bis(2-Chloroethoxy)methane	2.35	0.333	mg/kg wet	3.333		70	40-140			
bis(2-Chloroethyl)ether	2.23	0.090	mg/kg wet	3.333		67	40-140			
bis(2-chloroisopropyl)Ether	2.09	0.089	mg/kg wet	3.333		63	40-140			
bis(2-Ethylhexyl)phthalate	3.43	0.333	mg/kg wet	3.333		103	40-140			
Butylbenzylphthalate	3.43	0.333	mg/kg wet	3.333		103	40-140			
Chrysene	3.00	0.167	mg/kg wet	3.333		90	40-140			
Dibenzo(a,h)Anthracene	3.32	0.051	mg/kg wet	3.333		100	40-140			
Dibenzofuran	2.48	0.333	mg/kg wet	3.333		74	40-140			
Diethylphthalate	2.75	0.333	mg/kg wet	3.333		83	40-140			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
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ESS Laboratory Work Order: 20C0468

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

Dimethylphthalate	2.66	0.333	mg/kg wet	3.333		80	40-140			
Di-n-butylphthalate	3.08	0.333	mg/kg wet	3.333		93	40-140			
Di-n-octylphthalate	3.36	0.333	mg/kg wet	3.333		101	40-140			
Fluoranthene	2.94	0.333	mg/kg wet	3.333		88	40-140			
Fluorene	2.69	0.333	mg/kg wet	3.333		81	40-140			
Hexachlorobenzene	2.67	0.056	mg/kg wet	3.333		80	40-140			
Hexachlorobutadiene	2.04	0.333	mg/kg wet	3.333		61	40-140			
Hexachloroethane	2.04	0.084	mg/kg wet	3.333		61	40-140			
Indeno(1,2,3-cd)Pyrene	3.28	0.108	mg/kg wet	3.333		98	40-140			
Isophorone	2.02	0.333	mg/kg wet	3.333		61	40-140			
Naphthalene	2.16	0.333	mg/kg wet	3.333		65	40-140			
Nitrobenzene	2.28	0.333	mg/kg wet	3.333		68	40-140			
N-Nitrosodimethylamine	2.06	0.333	mg/kg wet	3.333		62	40-140			
Pentachlorophenol	3.27	0.288	mg/kg wet	3.333		98	30-130			
Phenanthrene	2.82	0.083	mg/kg wet	3.333		85	40-140			
Phenol	2.40	0.081	mg/kg wet	3.333		72	30-130			
Pyrene	3.07	0.333	mg/kg wet	3.333		92	40-140			
Pyridine	1.84	1.67	mg/kg wet	3.333		55	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.10		mg/kg wet	3.333		63	30-130			
Surrogate: 2,4,6-Tribromophenol	4.45		mg/kg wet	5.000		89	30-130			
Surrogate: 2-Chlorophenol-d4	3.43		mg/kg wet	5.000		69	30-130			
Surrogate: 2-Fluorobiphenyl	2.41		mg/kg wet	3.333		72	30-130			
Surrogate: 2-Fluorophenol	3.41		mg/kg wet	5.000		68	30-130			
Surrogate: Nitrobenzene-d5	2.40		mg/kg wet	3.333		72	30-130			
Surrogate: Phenol-d6	3.69		mg/kg wet	5.000		74	30-130			
Surrogate: p-Terphenyl-d14	3.15		mg/kg wet	3.333		95	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.17	0.167	mg/kg wet	3.333		65	40-140	4	30	
1,2-Dichlorobenzene	2.16	0.167	mg/kg wet	3.333		65	40-140	6	30	
1,3-Dichlorobenzene	2.09	0.080	mg/kg wet	3.333		63	40-140	4	30	
1,4-Dichlorobenzene	2.15	0.084	mg/kg wet	3.333		64	40-140	5	30	
2,4,5-Trichlorophenol	2.61	0.333	mg/kg wet	3.333		78	30-130	7	30	
2,4,6-Trichlorophenol	2.50	0.082	mg/kg wet	3.333		75	30-130	5	30	
2,4-Dichlorophenol	2.42	0.083	mg/kg wet	3.333		73	30-130	0.9	30	
2,4-Dimethylphenol	2.45	0.075	mg/kg wet	3.333		73	30-130	2	30	
2,4-Dinitrophenol	3.29	0.557	mg/kg wet	3.333		99	30-130	5	30	
2,4-Dinitrotoluene	2.96	0.107	mg/kg wet	3.333		89	40-140	6	30	
2,6-Dinitrotoluene	2.56	0.333	mg/kg wet	3.333		77	40-140	6	30	
2-Chloronaphthalene	2.25	0.333	mg/kg wet	3.333		67	40-140	2	30	
2-Chlorophenol	2.33	0.094	mg/kg wet	3.333		70	30-130	4	30	
2-Methylnaphthalene	2.21	0.072	mg/kg wet	3.333		66	40-140	0.7	30	
2-Methylphenol	2.35	0.333	mg/kg wet	3.333		71	30-130	2	30	
2-Nitrophenol	2.41	0.333	mg/kg wet	3.333		72	30-130	5	30	
3,3'-Dichlorobenzidine	2.43	0.074	mg/kg wet	3.333		73	40-140	7	30	
3+4-Methylphenol	4.62	0.667	mg/kg wet	6.667		69	30-130	0.6	30	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0468

Quality Control Data

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8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

4-Bromophenyl-phenylether	2.55	0.333	mg/kg wet	3.333		77	40-140	7	30	
4-Chloroaniline	1.47	0.075	mg/kg wet	3.333		44	40-140	3	30	
4-Nitrophenol	3.17	1.67	mg/kg wet	3.333		95	30-130	6	30	
Acenaphthene	2.33	0.081	mg/kg wet	3.333		70	40-140	5	30	
Acenaphthylene	2.15	0.064	mg/kg wet	3.333		64	40-140	5	30	
Acetophenone	2.18	0.667	mg/kg wet	3.333		65	40-140	5	30	
Aniline	1.73	1.67	mg/kg wet	3.333		52	40-140	0	30	
Anthracene	2.69	0.333	mg/kg wet	3.333		81	40-140	6	30	
Azobenzene	2.70	0.333	mg/kg wet	3.333		81	40-140	6	30	
Benzo(a)anthracene	2.85	0.058	mg/kg wet	3.333		85	40-140	6	30	
Benzo(a)pyrene	3.05	0.055	mg/kg wet	3.333		91	40-140	8	30	
Benzo(b)fluoranthene	2.98	0.074	mg/kg wet	3.333		89	40-140	7	30	
Benzo(g,h,i)perylene	2.97	0.333	mg/kg wet	3.333		89	40-140	7	30	
Benzo(k)fluoranthene	2.74	0.333	mg/kg wet	3.333		82	40-140	9	30	
bis(2-Chloroethoxy)methane	2.39	0.333	mg/kg wet	3.333		72	40-140	2	30	
bis(2-Chloroethyl)ether	2.34	0.090	mg/kg wet	3.333		70	40-140	4	30	
bis(2-chloroisopropyl)Ether	2.17	0.089	mg/kg wet	3.333		65	40-140	4	30	
bis(2-Ethylhexyl)phthalate	3.20	0.333	mg/kg wet	3.333		96	40-140	7	30	
Butylbenzylphthalate	3.17	0.333	mg/kg wet	3.333		95	40-140	8	30	
Chrysene	2.81	0.167	mg/kg wet	3.333		84	40-140	7	30	
Dibenzo(a,h)Anthracene	3.08	0.051	mg/kg wet	3.333		92	40-140	7	30	
Dibenzofuran	2.34	0.333	mg/kg wet	3.333		70	40-140	6	30	
Diethylphthalate	2.61	0.333	mg/kg wet	3.333		78	40-140	5	30	
Dimethylphthalate	2.48	0.333	mg/kg wet	3.333		74	40-140	7	30	
Di-n-butylphthalate	2.95	0.333	mg/kg wet	3.333		89	40-140	4	30	
Di-n-octylphthalate	3.07	0.333	mg/kg wet	3.333		92	40-140	9	30	
Fluoranthene	2.79	0.333	mg/kg wet	3.333		84	40-140	5	30	
Fluorene	2.55	0.333	mg/kg wet	3.333		77	40-140	5	30	
Hexachlorobenzene	2.49	0.056	mg/kg wet	3.333		75	40-140	7	30	
Hexachlorobutadiene	2.15	0.333	mg/kg wet	3.333		64	40-140	5	30	
Hexachloroethane	2.17	0.084	mg/kg wet	3.333		65	40-140	6	30	
Indeno(1,2,3-cd)Pyrene	3.05	0.108	mg/kg wet	3.333		91	40-140	7	30	
Isophorone	2.03	0.333	mg/kg wet	3.333		61	40-140	0.4	30	
Naphthalene	2.24	0.333	mg/kg wet	3.333		67	40-140	4	30	
Nitrobenzene	2.38	0.333	mg/kg wet	3.333		71	40-140	4	30	
N-Nitrosodimethylamine	2.16	0.333	mg/kg wet	3.333		65	40-140	5	30	
Pentachlorophenol	3.13	0.288	mg/kg wet	3.333		94	30-130	5	30	
Phenanthrene	2.64	0.083	mg/kg wet	3.333		79	40-140	7	30	
Phenol	2.45	0.081	mg/kg wet	3.333		73	30-130	2	30	
Pyrene	2.83	0.333	mg/kg wet	3.333		85	40-140	8	30	
Pyridine	1.91	1.67	mg/kg wet	3.333		57	40-140	4	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.22		mg/kg wet	3.333		67	30-130			
Surrogate: 2,4,6-Tribromophenol	4.14		mg/kg wet	5.000		83	30-130			
Surrogate: 2-Chlorophenol-d4	3.56		mg/kg wet	5.000		71	30-130			
Surrogate: 2-Fluorobiphenyl	2.39		mg/kg wet	3.333		72	30-130			



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D Semi-Volatile Organic Compounds

Batch DC01610 - 3546

Surrogate: 2-Fluorophenol	3.50		mg/kg wet	5.000		70	30-130			
Surrogate: Nitrobenzene-d5	2.53		mg/kg wet	3.333		76	30-130			
Surrogate: Phenol-d6	3.78		mg/kg wet	5.000		76	30-130			
Surrogate: p-Terphenyl-d14	2.92		mg/kg wet	3.333		88	30-130			

Classical Chemistry

Batch DC01631 - General Preparation

Reference

Flashpoint	81		°F	81.00		100	97.9-102.1			
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Batch DC01819 - General Preparation

Blank

Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							

LCS

Reactive Cyanide	4.0	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	ND	2.0	mg/kg	10.00		0	0-44			

Batch DC01829 - General Preparation

Reference

Flashpoint	81		°F	81.00		100	97.9-102.1			
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CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

Notes and Definitions

- Z18 Temperature is not within 23 +/-2 °C.
- Z-10a Soil pH measured in water at 19.2 °C.
- Z-10 Soil pH measured in water at 19.1 °C.
- U Analyte included in the analysis, but not detected
- SD Surrogate recovery(ies) diluted below the MRL (SD).
- Q Calibration required quadratic regression (Q).
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- E Reported above the quantitation limit; Estimated value (E).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- > Greater than.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Tombarello Site Investigation

ESS Laboratory Work Order: 20C0468

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB
 Shipped/Delivered Via: ESS Courier

ESS Project ID: 20C0468
 Date Received: 3/13/2020
 Project Due Date: 3/20/2020
 Days for Project: 5 Day

1. Air bill manifest present? No
 Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present?
 Temp: 3.6 Iced with: Ice Yes
5. Was COC signed and dated by client? Yes

6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. Were labs informed about short holds & rushes? Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes / No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
 a. If metals preserved upon receipt: Date: 3/13/20 Time: _____ By: _____
 b. Low Level VOA vials frozen: Date: 3/13/20 Time: 2032 By: ML

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
 a. Was there a need to contact the client? Yes / No
 Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	23739	Yes	N/A	Yes	VOA Vial	MeOH	
1	23741	Yes	N/A	Yes	VOA Vial	DI Water	
1	23742	Yes	N/A	Yes	VOA Vial	DI Water	
1	23745	Yes	N/A	Yes	8 oz jar	NP	
1	23746	Yes	N/A	Yes	8 oz jar	NP	
2	23740	Yes	N/A	Yes	VOA Vial	MeOH	
2	23743	Yes	N/A	Yes	VOA Vial	DI Water	
2	23744	Yes	N/A	Yes	VOA Vial	DI Water	
2	23747	Yes	N/A	Yes	8 oz jar	NP	
2	23956	Yes	N/A	Yes	4 oz. Jar	NP	
2	23957	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review
 Were all containers scanned into storage/lab?
 Are barcode labels on correct containers?
 Are all Flashpoint stickers attached/container ID # circled?
 Are all Hex Chrome stickers attached?
 Are all QC stickers attached?

Initials: [Signature]
 Yes / No
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 20C0468

Date Received: 3/13/2020

Are VOA stickers attached if bubbles noted?

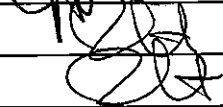
Yes / No / NA

Completed
By:



Date & Time: 3/13/20 2009

Reviewed
By:



Date & Time: 3/13/20 2033

Delivered
By:



Date & Time: 3/13/20 2033

Chain-of-Custody Record

Laboratory: ESS

Laboratory Job #

(Lab use only)

2000468



400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073

Project Information

Project Name: Former Tombarello

Project Location: Lawrence MA

Project Number: 1802441

Project Manager: L. Lombardo
339.221.3551

Send Report to: Elise Farrington

Send EDD to: labdata@geiconsultants.com

Preservative

MeOH DI H2O None None

Analysis

VOC(High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals**, Ignitability, Corrosivity, RCN/IS	PCBs*										
x	x	x	x										
x	x	x	x										

Page 3 of 8

Sample Handling

Samples Field Filtered
YES NO NA

Sampled Shipped With Ice
YES NO

MCP PRESUMPTIVE CERTAINTY REQUIRED:

YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

If Yes, Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	VOC(High Level)	VOC (Low Level)	SVOCs, RCRA 8 Metals**, Ignitability, Corrosivity, RCN/IS	PCBs*									Sample Specific Remarks	
		Date	Time																	
1	1802441-Lot2-DISP01	3/13/2020	8:45	SO	5	BRL	x	x	x	x										
2	1802441-Lot2-DISP02	3/13/2020	9:55	SO	6	BRL	x	x	x	x										

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

Turnaround Time (Business days):

Normal ___ Other ___
10-Day ___ 7-Day ___
5-Day X 3-Day ___

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

* Manual Soxhlet Extraction for PCBs. Analysis must be performed in accordance with GEI's Site Specific QAPP.

**Run TCLP if 20x Rule Exceeded

Relinquished by: (signature) 1. <i>[Signature]</i>	Date: 5/13/20	Time: 1400	Received by: (signature) <i>[Signature]</i>
Relinquished by: (signature) 2. <i>[Signature]</i>	Date: 3/13/20	Time: 1904	Received by: (signature) 2. <i>[Signature]</i>
Relinquished by: (signature) 3.	Date:	Time:	Received by: (signature) 3.
Relinquished by: (signature) 4.	Date:	Time:	Received by: (signature) 4.


MassDEP RTN 3-18126
Revised Phase II Comprehensive Site Assessment and
Revised Tier Classification
Former Tombarello Property, 207 Marston Street,
Lawrence, Massachusetts
August 2020

Appendix J

Soil Berm and Soil Pile Test Pit and Boring Logs


TEST PIT LOG			BBerm-01N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	At base of north side
Client	City of Lawrence		of southern berm.	
Contractor	Northern Drill Services, Inc.		Ground El.	NM
Equipment/Reach	TB290 Excavator		Datum	NA
Operator	Justin Stevens	GEI Rep	C. Saldas	
Weather	80's, Sunny		GEI Proj. No.	1802441
			Date	7/30/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, metal fragments, some roots in upper 6", loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 29.9 ppm. Test pit backfilled with excavated soil upon completion. Sample collected: Bberm-01N(0-1) at 0905</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 60%;">length</td><td style="text-align: center;">3</td></tr> <tr><td>width</td><td style="text-align: center;">3</td></tr> <tr><td>depth</td><td style="text-align: center;">2</td></tr> </table>	length	3	width	3	depth	2	
length	3							
width	3							
depth	2							

TEST PIT LOG			BBerm-01S	
Project	Former Tombarello		PG.	<u>1</u> OF <u>1</u>
City/Town	Lawrence, Massachusetts		Location	<u>At base of north side</u>
Client	City of Lawrence			<u>of southern berm.</u>
Contractor	Northern Drill Services, Inc.		Ground El.	<u>NM</u>
Equipment/Reach	TB290 Excavator		Datum	<u>NA</u>
Operator	Justin Stevens	GEI Rep C. Saldas	GEI Proj. No.	<u>1802441</u>
Weather	70's, Sunny		Date	<u>9/10/2019</u>

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	'WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, metal fragments, some roots in upper 6", loosely packed FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 2.5 ppm</p> <p>Sample collected: BBerm-01S(0-1) at 1000</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3</u></p> <p>width <u>2</u></p> <p>depth <u>1</u></p>		

TEST PIT LOG			BBerm-02N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	At base of north side of southern berm.
Client	City of Lawrence		Ground El.	NM
Contractor	Northern Drill Services, Inc.		Datum	NA
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	
Weather	80's, Sunny		Date	7/30/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.

Notes: Jar headspace reading for the test pit: 1.7ppm
 Test pit backfilled with excavated soil upon completion.
 Sample collected: BBerm-02N(0-1) at 1015


ppm = parts per million.

Pit Dimensions (ft)	
length	3
width	2.5
depth	1.5




TEST PIT LOG		BBerm-02S	
Project	Former Tombarello	PG.	<u>1</u> OF <u>1</u>
City/Town	Lawrence, Massachusetts	Location	At base of north side of southern berm.
Client	City of Lawrence	Ground El.	NM
Contractor	Northern Drill Services, Inc.	Datum	NA
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saldas	Date	9/10/2019
Weather	70's, Sunny		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	WIDELY GRADED SAND WITH GRAVEL(SW); ~80% medium fine sand, ~15% subrounded and subangular gravel up to 2", ~5% silt, light brown, brick fragments, glass bottles, metal fragments, loosely packed.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for the test pit: 0.0ppm Sample collected: BBerm-02S(0-1) at 1045 ppm = parts per million.	Pit Dimensions (ft)		
	length	<u>3</u>	
	width	<u>3</u>	
	depth	<u>1</u>	

TEST PIT LOG			BBerm-03N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	At base of north side of southern berm.
Client	City of Lawrence		Ground El.	NM
Contractor	Northern Drill Services, Inc.		Datum	NA
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	7/30/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium to coarse sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.

Notes: Jar headspace reading for test pit: 10.1ppm Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-03N(0-1) at 1135. ppm = parts per million.	Pit Dimensions (ft)		
	length	4	
	width	4	
	depth	1.5	

TEST PIT LOG			BBerm-03N	
Project	<u>Former Tombarello</u>		PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>		Location	<u>At base of north side</u>
Client	<u>City of Lawrence</u>			<u>of southern berm.</u>
Contractor	<u>Northern Drill Services, Inc.</u>		Ground El.	<u>NM</u>
Equipment/Reach	<u>TB290 Excavator</u>		Datum	<u>NA</u>
Operator	<u>Justin Stevens</u>	GEI Rep <u>C. Saledas</u>	GEI Proj. No.	<u>1802441</u>
Weather	<u>70's, Sunny</u>		Date	<u>9/10/2019</u>

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% fine to medium sand, ~10% subrounded 0.5", ~5% silt, brown, brick fragments, glass fragments, metal fragments, roots, rubber fragments, loosely packed.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.3ppm Sample collected: BBerm-03S(0-1) at 1125. ppm = parts per million.	Pit Dimensions (ft) length <u>3</u> width <u>4</u> depth <u>1</u>	 GEI <small>Consultants</small>
---	---	--

TEST PIT LOG

BBerm-04N

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saldas
Weather 80's, Sunny

PG. 1 **OF** 1
Location At base of north side of southern berm.
Ground El. NM
Datum NA
GEI Proj. No. 1802441
Date 7/30/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% medium to fine sand, ~15% subrounded and subangular gravel up to 2", ~5% silt, brown, brick fragments, plastic fragments, roots, loosely packed FILL.

Notes: Jar headspace reading for test pit: 52.0ppm
 Test pit backfilled with excavated soil upon completion.
 Sample collected: BBerm-04N(0-1) at 1230.


 ppm = parts per million.

Pit Dimensions (ft)	
length	3
width	3
depth	1.5



TEST PIT LOG			BBerm-04S	
Project	Former Tombarello		PG.	<u>1</u> OF <u>1</u>
City/Town	Lawrence, Massachusetts		Location	<u>At base of north side</u>
Client	City of Lawrence			<u>of southern berm.</u>
Contractor	Northern Drill Services, Inc.		Ground El.	<u>NM</u>
Equipment/Reach	TB290 Excavator		Datum	<u>NA</u>
Operator	Justin Stevens	GEI Rep C. Saldas	GEI Proj. No.	<u>1802441</u>
Weather	70's, Sunny		Date	<u>9/10/2019</u>

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium to fine sand, ~20% subrounded and subangular gravel up to 2", ~5% silt, brown to brown, brick fragments, burnt coal fragments, glass fragments, metal fragments, roots.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.4ppm Sample collected: BBerm-04S(0-1) at 1205. ppm = parts per million.	Pit Dimensions (ft) length <u>3</u> width <u>3</u> depth <u>1</u>	

TEST PIT LOG

BBerm-05N

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saldas
Weather 80's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 7/30/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% medium to fine sand, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal fragments, plastic fragments, loosely packed FILL.

Notes: Jar headspace readings not available due to malfunctioning PID.
Test pit backfilled with excavated soil upon completion.
Sample collected: BBerm-05N(0-1) at 1405.

PID = photo-ionization detector

Pit Dimensions (ft)

length	<u>3</u>
width	<u>3</u>
depth	<u>1</u>



TEST PIT LOG

BBerm-05S

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saledas
Weather 70's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. **1802441**
Date 9/10/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% medium to fine sand, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, concrete fragments, glass fragments.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0ppm.
Sample collected: BBerm-05S(0-1) at 1305.
ppm = parts per million.


Pit Dimensions (ft)
length 3
width 3
depth 1



TEST PIT LOG			BBerm-06N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	7/31/2019


Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, burnt coal fragments, glass fragments, metal fragments, rubber pieces, roots, loosely packed FILL.

Notes: Jar headspace readings in test pit: 53.2ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-06N(0-1) at 0920. ppm = parts per million.	Pit Dimensions (ft)	
	length	4
	width	3
	depth	2



TEST PIT LOG			BBerm-06S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date
Weather	70's, Sunny			9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% fine sand, ~20% subrounded gravel up to 3", ~5% silt, light brown, brick fragments, glass fragments, roots.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace readings in test pit: 0.1ppm. Sample collected: BBerm-06S(0-1) at 0800. ppm = parts per million.	Pit Dimensions (ft)		
	length	3	
	width	3	
	depth	1	

TEST PIT LOG

BBerm-07N

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saledas
Weather 80's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 8/1/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal pieces, rubber fragments, loosely packed FILL.

Notes: Jar headspace reading for test pit: 7.9ppm.
Test pit backfilled with excavated soil upon completion.
Sample collected: BBerm-07N(0-1') at 0750.


ppm = parts per million.

Pit Dimensions (ft)	
length	<u>4</u>
width	<u>3</u>
depth	<u>2</u>




TEST PIT LOG			BBerm-07S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep	C. Saldas	GEI Proj. No. 1802441
Weather	70's, Sunny		Date	9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	WIDELY GRADED SAND (SW); ~75% sand, ~20% subrounded gravel up to 3", ~5% silt, light brown to red brown, bricks, clay, pipe pieces, glass fragments, metal pieces.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0ppm. Sample collected: BBerm-07S(0-1') at 0825. ppm = parts per million.	Pit Dimensions (ft)	
	length 3.5	
width 3.5		
	depth 1	


TEST PIT LOG				BBerm-08N	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	C. Saledas	GEI Proj. No.	1802411
Weather	80's, Sunny			Date	7/31/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	NARROWLY GRADED SAND (SP); ~85% medium sand, ~10% subrounded and subangular gravel up to 2", ~5% silt, brown, brick fragments, rubber pieces, roots, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 78.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-08N(0-1) at 1330.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft)		
	length	3	
	width	3	
		depth	2


TEST PIT LOG			BBerm-08S	
Project	Former Tombarello		PG.	<u> 1 </u> OF <u> 1 </u>
City/Town	Lawrence, Massachusetts		Location	<u> </u>
Client	City of Lawrence		Ground El.	<u> </u>
Contractor	Northern Drill Services, Inc.		Datum	<u> </u>
Equipment/Reach	TB290 Excavator		GEI Proj. No.	<u> 1802411 </u>
Operator	Justin Stevens	GEI Rep C. Saledas	Date	<u> 9/11/2019 </u>
Weather	70's, Sunny			

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% fine sand, ~10% subrounded gravel up to 2", ~5% silt, light brown, brick fragments (red and painted white), glass fragments, plastic poly pieces, roots.

Notes: Jar headspace reading for test pit: 0.0ppm. Sample collected: BBerm-08S(0-1) at 0905. ppm = parts per million.	Pit Dimensions (ft)	
	length <u> 3 </u>	
width <u> 3 </u>		
	depth <u> 1 </u>	

TEST PIT LOG				BBerm-09N	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	C. Saldas	GEI Proj. No.	1802441
Weather	80's, Sunny			Date	8/1/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0			WIDELY GRADED SAND (SW); ~85% sand, ~10% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, roots, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 1.4ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-09N(0-1) at 0935.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3.5</u></p> <p>width <u>2</u></p> <p>depth <u>2</u></p>	
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TEST PIT LOG				BBerm-09S	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	_____
Client	City of Lawrence				_____
Contractor	Northern Drill Services, Inc.			Ground El.	_____
Equipment/Reach	TB290 Excavator			Datum	_____
Operator	Justin Stevens	GEI Rep	C. Saldas	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	<p>NARROWLY GRADED SAND (SP); ~90% fine sand, ~5% silt, ~5% subrounded and subangular gravel up to 2", light brown, brick fragments, metal fragments, loosely packed FILL.</p> <hr/> <p>Test pit completed to 1 foot and backfilled with excavated soil.</p>

<p>Notes: Jar headspace reading for test pit: 0.0ppm.</p> <p>Sample collected: BBerm-09S(0-1) at 1035.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 3</p> <hr/> <p>width 3</p> <hr/> <p>depth 1</p>	
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TEST PIT LOG				BBerm-10E	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date	9/11/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% medium sand, ~15% subrounded and subangular gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal bar, plastic fragments, loosely packed FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0ppm.

Sample collected: BBerm-10E(0-1) at 1010.

ppm = parts per million.

Pit Dimensions (ft)	
length	3
width	3
depth	1



TEST PIT LOG

BBerm-10W

Project	Former Tombarello		
City/Town	Lawrence, Massachusetts		
Client	City of Lawrence		
Contractor	Northern Drill Services, Inc.		
Equipment/Reach	TB290 Excavator		
Operator	Justin Stevens	GEI Rep	C. Saldas
Weather	80's, Sunny		

PG.	1	OF	1
Location	_____		
Ground El.	_____		
Datum	_____		
GEI Proj. No.	1802441		
Date	7/31/2019		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% sand, ~30% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, burnt coal fragments, glass fragments, metal fragments, loosely packed FILL.

Notes: Jar headspace readings not available due to malfunctioning PID
 Test pit backfilled with excavated soil upon completion.
 Sample collected: BBerm-10W(0-1) at 1135.


PID = photo-ionization detector

Pit Dimensions (ft)	
length	3
width	3
depth	1.5




TEST PIT LOG			BBerm-11E	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	9/16/2019
Weather	70's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% fine sand, ~20% subrounded gravel up to 2", ~5% silt, light brown, brick fragments, glass fragments, roots.
			Test pit completed to 1 foot and backfilled with excavated soil.

<p>Notes: Jar headspace readings in test pit: 0.1ppm.</p> <p>Sample collected: BBerm-012E(0-1) at 0750 and EB-13 at 0800.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u> 3 </u></p> <p>width <u> 3 </u></p> <p>depth <u> 1 </u></p>	
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TEST PIT LOG			BBerm-11W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	7/31/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	NARROWLY GRADED SAND (SP); ~80% medium to fine sand, ~15% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, roots, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 5.8ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-11W(0-1).</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft)		
	length	3	
	width	3.5	
	depth	1.5	


TEST PIT LOG			BBerm-12E	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	
Weather	70's, Sunny		Date	9/16/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% medium-fine sand, ~15% subrounded and subangular gravel up to 3", ~5% silt, light brown, brick fragments, glass fragments, loosely packed FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.0ppm.</p> <p>Sample collected: BBerm-12E(0-1) at 0805.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u> 3 </u></p> <p>width <u> 3 </u></p> <p>depth <u> 1 </u></p>	
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TEST PIT LOG			BBerm-12W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0			NARROWLY GRADED SAND WITH GRAVEL; ~85% medium/fine sand, ~10% subrounded gravel up to 2", ~5% silt, light brown, brick fragments, glass fragments, FILL.

Notes: Jar headspace reading for test pit: 0.6ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-12W(0-1) at 1135. ppm = parts per million.	Pit Dimensions (ft)	
	length 2.5	
width 3.5		
	depth 2	

TEST PIT LOG			BBerm-06S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saldas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~90% fine sand, ~5% subrounded gravel up to 1", ~5% silt, light brown, glass fragments, roots.
			Test pit completed to 1 foot and backfilled with excavated soil.

<p>Notes: Jar headspace readings in test pit: 0.0ppm.</p> <p>Sample collected: BBerm-06S(0-1) at 0845.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 3</p> <p>width 3</p> <p>depth 1</p>	
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TEST PIT LOG			BBERM-13W	
Project	Former Tombarello		PG.	<u> 1 </u> OF <u> 1 </u>
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	<u> 1802441 </u>
Operator	Justin Stevens	GEI Rep B.Lee	Date	<u> 8/1/2019 </u>
Weather	80's, Sunny			

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		1-2	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Light brown and dry. Brick, plastic, and concrete fragments. Loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.3 ppm
 Test pit backfilled with excavated soil upon completion.
 Sample collected: BBerm-13W(0-1) at 1240


ppm = parts per million.

Pit Dimensions (ft)	
length	<u> 3 </u>
width	<u> 3 </u>
depth	<u> 1 </u>



TEST PIT LOG				BBerm-14E(0-1)	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	9/13/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% fine sand, ~10% subrounded gravel up to 2", ~5% silt, brown to light brown, brick fragments, glass fragments, roots, FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0 ppm Sample collected: BBerm-14E(0-1) at 1345 ppm = parts per million.	Pit Dimensions (ft)		
	length	3	
	width	3	
	depth	1	


TEST PIT LOG				Bberm-14W(0-1)	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny			Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		1-2	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Brown and dry. Brick and concrete fragments. Loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.4 ppm
Test pit backfilled with excavated soil upon completion.
Sample collected: Bberm-14W(0-1) at 1330


ppm = parts per million.

Pit Dimensions (ft)	
length	3
width	3
depth	1




TEST PIT LOG			BBerm-15E	
Project	Former Tombarello		PG.	<u> 1 </u> OF <u> 1 </u>
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date
Weather	70's, Sunny			<u> 9/13/2019 </u>

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~85% sand, ~10% subrounded gravel up to 2", ~5% silt, light brown, bricks, glass fragments, roots, rubber tubing, tile fragments, loosely packed FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.6ppm. Sample collected: BBerm-15E(0-1) at 1035. ppm = parts per million.	Pit Dimensions (ft)		
	length	<u> 3 </u>	
	width	<u> 3 </u>	
	depth	<u> 1 </u>	

TEST PIT LOG		BBerm-15W	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saldas	Date	8/2/2019
Weather	80's, Sunny		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	NARROWLY GRADED SAND (SP); ~85% medium/fine sand, ~10% subrounded gravel up to 2", ~5% silt, light brown, glass fragments, loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.5ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-15W(0-1) at 0825. ppm = parts per million.	Pit Dimensions (ft) length 3 width 3 depth 2	

TEST PIT LOG

BBerm-16E

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saldas
Weather 70's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 9/13/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% fine sand, ~15% subrounded gravel up to 2", ~5% silt, light brown-gray, glass fragments, metal fragments loosely packed FILL.
			Test pit completed to 1.5 feet and backfilled with excavated soil.


Notes: Jar headspace reading for test pit: 0.0ppm.
 Sample collected: BBerm-16E(0-1) at 1000.
 ppm = parts per million.

Pit Dimensions (ft)	
length	<u>3</u>
width	<u>3</u>
depth	<u>1</u>




TEST PIT LOG			BBerm-16W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saldas	Date	8/2/2019
Weather	80's, Sunny			

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1	NARROWLY GRADED SAND (SP); ~85% medium/fine sand, ~10% subrounded gravel up to 2", ~5% silt, light brown, glass fragments, loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.8ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-16W(0-1) at 1020. ppm = parts per million.	Pit Dimensions (ft) length 3.5 width 3.5 depth 2		


TEST PIT LOG		BBerm-17E	
Project	<u>Former Tombarello</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>	Location	<u></u>
Client	<u>City of Lawrence</u>	Ground El.	<u></u>
Contractor	<u>Northern Drill Services, Inc.</u>	Datum	<u></u>
Equipment/Reach	<u>TB290 Excavator</u>	GEI Proj. No.	<u>1802441</u>
Operator	<u>Justin Stevens</u> GEI Rep <u>C. Saldas</u>	Date	<u>9/13/2019</u>
Weather	<u>70's, Sunny</u>		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1	NARROWLY GRADED SAND (SP); ~90% fine sand, ~5% subrounded gravel up to 0.5", ~5% silt, light brown, roots, surficial glass fragments, FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0ppm. Sample collected: BBerm-17E(0-1) at 0920. ppm = parts per million.	Pit Dimensions (ft)	
	length <u>3</u>	
width <u>3</u>		
	depth <u>1</u>	


TEST PIT LOG			BBerm-17W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep	C. Saldas	
Weather	80's, Sunny		GEI Proj. No.	1802441
			Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to medium sand, ~30% subangular gravel up to 2", ~5% silt, light brown, brick fragments, glass fragments, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 0.0ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-17W(0-1) at 1215.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 3</p> <p>width 3</p> <p>depth 1.5</p>	
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TEST PIT LOG			BBerm-18W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep	C. Saldas	GEI Proj. No. 1802441
Weather	80's, Sunny		Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.5		0-1	WIDELY GRADED SAND (SW); ~75% fine to medium sand, ~20% subangular gravel up to 1", ~5% silt, brown, glass fragments, roots, loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.2ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-18W(0-1) at 1110. ppm = parts per million.	Pit Dimensions (ft) length <u> 3 </u> width <u> 3.5 </u> depth <u> 1.5 </u>	


TEST PIT LOG		BBerm-19E	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saledas	Date	9/13/2019
Weather	70's, Sunny		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0		0-1'	WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, ~15% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, wires, roots, moist, loosely packed FILL.
			Test pit completed to 1 foot and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.2ppm. Sample collected: BBerm-19E(0-1) at 0815. ppm = parts per million.	Pit Dimensions (ft)		
	length	3	
	width	3	
	depth	1	


TEST PIT LOG		BBerm-19W	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saledas	Date	8/1/2019
Weather	80's, Sunny		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2.0		0-1'	WIDELY GRADED SAND WITH GRAVEL (SW); ~60% fine to medium sand, ~35% subangular gravel up to 4", ~5% silt, brown, glass fragments, plastic fragments, roots, moist, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 0.4ppm. Test pit backfilled with excavated soil upon completion. Sample collected: BBerm-19W(0-1) at 1120.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">length</td><td style="border-bottom: 1px solid black; text-align: center;">2.5</td></tr> <tr><td style="padding: 2px;">width</td><td style="border-bottom: 1px solid black; text-align: center;">3.5</td></tr> <tr><td style="padding: 2px;">depth</td><td style="border-bottom: 1px solid black; text-align: center;">2</td></tr> </table>	length	2.5	width	3.5	depth	2	
length	2.5							
width	3.5							
depth	2							


TEST PIT LOG			MBerm-01N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saldas	Date	7/30/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, metal fragments, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 11.8ppm Test pit backfilled with excavated soil upon completion. Samples collected: EB-01 at 0900, MBerm-01N(5-6) at 0845, and FD-01 at 1200 ppm = parts per million.	Pit Dimensions (ft)		
	length	6.5	
	width	4	
	depth	5	


TEST PIT LOG			MBerm-01S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/10/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	WIDELY GRADED SAND (SW); ~85% medium fine sand, ~10% subrounded 2", ~5% silt, light brown, black wire, glass fragments, metal scraps and pipes, wood fragments, loosely packed FILL.
			Test pit completed at 6 feet and backfilled with excavated.

Notes: Jar headspace reading for test pit: 3.0ppm Samples collected: EB-09 at 0950 and MBerm-01S(5-6) at 0945 ppm = parts per million.	Pit Dimensions (ft)		
	length	5	
	width	3	
	depth	6	


TEST PIT LOG			MBerm-02N			
Project	Former Tombarello		PG.	1	OF	1
City/Town	Lawrence, Massachusetts		Location	_____		
Client	City of Lawrence		Ground El.	_____		
Contractor	Northern Drill Services, Inc.		Datum	_____		
Equipment/Reach	TB290 Excavator		GEI Proj. No. 1802441		_____	
Operator	Justin Stevens	GEI Rep	C. Saledas		_____	
Weather	80's, Sunny		Date	7/30/2019		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, burnt coal fragments, glass fragments, metal fragments, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 0.6ppm Test pit backfilled with excavated soil upon completion. Sample collected: Mberm-02N(5-6) at 1005</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 6.5</p> <p>width 4</p> <p>depth 6</p>	
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TEST PIT LOG				MBerm-02S	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date	9/10/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, ~15% subrounded and subangular gravel up to 3", ~5% silt, brown to brown, glass fragments, metal pipes, plastic pieces, porcelain fragments, tire pieces.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.3ppm Sample collected: Mberm-02S(5-6) at 1035 ppm = parts per million.	Pit Dimensions (ft)		
	length	4	
	width	3	
	depth	6	


TEST PIT LOG			MBerm-03N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	7/30/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium to coarse sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.
5.0			

Notes: Jar headspace readings not available due to malfunctioning PID. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-03N(4-5) at 1120. PID = photo-ionization detector	Pit Dimensions (ft)	
	length 5 width 3 depth 5	


TEST PIT LOG				MBerm-03S	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date	9/10/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% medium fine sand, ~15% subrounded and subangular gravel up to 2", ~5% silt, gray brown, glass fragments, metal fragments, roots, rubber/tire fragments, loosely packed.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0ppm Samples collected: MBerm-03S(5-6) at 1110 and FD-21 at 1201. ppm = parts per million.	Pit Dimensions (ft) length <u>6</u> width <u>3.5</u> depth <u>6</u>	

TEST PIT LOG			MBerm-04N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No. 1802441	_____
Operator	Justin Stevens	GEI Rep C. Saledas	Date	7/30/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	WIDELY GRADED SAND (SW); ~85% sand, ~10% subrounded and subangular gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 41.4ppm Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-04N(5-6) at 1215.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u> 5 </u></p> <p>width <u> 3.5 </u></p> <p>depth <u> 6 </u></p>	
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TEST PIT LOG

MBerm-04S

Project	Former Tombarello		
City/Town	Lawrence, Massachusetts		
Client	City of Lawrence		
Contractor	Northern Drill Services, Inc.		
Equipment/Reach	TB290 Excavator		
Operator	Justin Stevens	GEI Rep	C. Saldas
Weather	70's, Sunny		

PG.	1	OF	1
Location	_____		
Ground El.	_____		
Datum	_____		
GEI Proj. No.	1802441		
Date	9/10/2019		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND (SP); ~85% medium fine sand, ~10% subrounded gravel up to 2", ~5% silt, light brown to brown, brick fragments, glass fragments, metal pipe, steel girder.
			Test pit completed to 6 feet and backfilled with excavated soil.


Notes: Jar headspace reading for test pit: 0.1ppm
Sample collected: MBerm-04S(5-6) at 1155.
ppm = parts per million.

Pit Dimensions (ft)	
length	5
width	3.5
depth	6




TEST PIT LOG			MBerm-05N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	7/30/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND (SP); ~85% medium to fine sand, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal fragments, plastic fragments, loosely packed FILL.

<p>Notes: Jar headspace readings not available due to malfunctioning PID. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-05N(5-6) at 1345.</p> <p>PID = photo-ionization detector</p>	Pit Dimensions (ft) length 6 width 5 depth 6	
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TEST PIT LOG			MBerm-05S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/10/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND (SP); ~85% medium to fine sand, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, concrete fragments, glass fragments.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for the test pit: 0.4ppm.</p> <p>Sample collected: MBerm-05S(5-6) at 1250.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>4</u></p> <p>width <u>4</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG		MBerm-06N	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saldas	Date	7/31/2019
Weather	80's, Sunny		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, borwn, brick fragments, glass fragments, metal fragments, roots, loosely packed FILL.
5.0			

<p>Notes: Jar headspace readings not available due to malfunctioning PID. Test pit backfilled with excavated soil upon completion. Samples collected: MBerm-06N at 0900 and EB-02 at 0910.</p> <p>PID = photo-ionization detector</p>	Pit Dimensions (ft)		
	length	4.5	
	width	3	
	depth	5	


TEST PIT LOG			MBerm-06S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date
Weather	70's, Sunny			9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium fine sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, light brown, brick fragments, glass fragments, metal fragments/container, plastic sheeting.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.0ppm.</p> <p>Samples collected: MBerm-06S at 0750 and EB-10 at 0755.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>5.5</u></p> <p>width <u>4</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG			MBerm-07N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saldas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	WIDELY GRADED SAND (SW); ~85% sand, ~10% subrounded gravel up to 5", ~5% silt, brown, glass fragments, metal pieces, roots, rubber fragments, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 7.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-07N(5-6). ppm = parts per million.	Pit Dimensions (ft)		
	length	5	
width	4		
	depth	6	


TEST PIT LOG			MBerm-07S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date
Weather	70's, Sunny			9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% fine sand, ~15% subrounded and subangular gravel up to 2", ~5% silt, light brown, brick fragments, glass fragments, 1.5' metal pipe piece, plastic poly sheeting, porcelain fragments, roots.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.0ppm.</p> <p>Sample collected: MBerm-07S(5-6) at 0815.</p> <p>ppm = parts per million.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Pit Dimensions (ft)</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">length</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="padding: 2px;">width</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="padding: 2px;">depth</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	Pit Dimensions (ft)		length	5	width	5	depth	6	
Pit Dimensions (ft)										
length	5									
width	5									
depth	6									


TEST PIT LOG				MBerm-08N	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	C. Saledas	GEI Proj. No.	1802441
Weather	80's, Sunny			Date	7/31/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6	NARROWLY GRADED SAND (SP); ~85% medium to coarse sand, ~10% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, glass fragments, rubber pieces, roots, loosely packed FILL.
6.0			

<p>Notes: Jar headspace reading for test pit: 56.8ppm. Test pit backfilled with excavated soil upon completion. Samples collected: MBerm-08(5-6) at 1310 and FD-03 at 1205.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 6.5</p> <p>width 4</p> <p>depth 6</p>	
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TEST PIT LOG			MBerm-08S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date
Weather	70's, Sunny			9/11/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND (SP); ~85% medium fine, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, clay tiles, glass bottles, roots, scrap metal.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.0ppm.</p> <p>Sample collected: MBerm-08S(5-6) at 0855.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">length</td><td style="text-align: center;">6.5</td></tr> <tr><td>width</td><td style="text-align: center;">4</td></tr> <tr><td>depth</td><td style="text-align: center;">6</td></tr> </table>	length	6.5	width	4	depth	6	
length	6.5							
width	4							
depth	6							


TEST PIT LOG			MBerm-09N	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saldas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0			WIDELY GRADED SAND (SW); ~85% sand, ~10% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.

Notes: Jar headpace reading for test pit: 4.5ppm. Test pit backfilled with excavated soil upon completion. Samples collected: FD-05 at 1200 and MBerm-09N(5-6) at 0915. ppm = parts per million.	Pit Dimensions (ft)		
	length	6	
	width	4	
	depth	6	


TEST PIT LOG			MBerm-09S	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	9/11/2019
Weather	70's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND (SP); ~85% fine sand, ~10% subrounded gravel up to 1.5", ~5% silt, light-brown to brown, glass fragments, roots, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headpace reading for test pit: 0.0ppm.</p> <p>Samples collected: MBerm-09S(5-6) at 1025.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>5</u></p> <p>width <u>4</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG			MBerm-10E	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date
Weather	70's, Sunny			9/11/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1			
2			
3			
4			
5		5-6	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium sand, ~20% subrounded and subangular gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal fragments, steel cable, FILL.
6			Test pit completed to 6 feet and backfilled with excavated soil.
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

<p>Notes: Jar headspace reading in test pit: 0.0ppm.</p> <p>Sample collected: MBerm-10E(5-6) at 1000.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>6</u></p> <p>width <u>4</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG		MBerm-10W	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saldas	Date	7/31/2019
Weather	80's, Sunny		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
5.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, ~15% subrounded and subangular gravel up to 6", ~5% silt, brown, brick fragments, burnt coal fragments, glass fragments, metal fragments, loosely packed FILL.
6.0			
6.5			
7.0			
7.5			
8.0			
8.5			
9.0			
9.5			
10.0			
10.5			
11.0			
11.5			
12.0			

<p>Notes: Jar headspace readings not available due to malfunctioning PID. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-10W(5-6) at 1125.</p> <p>PID = photo-ionization detector</p>	<p>Pit Dimensions (ft)</p> <p>length 7</p> <p>width 3.5</p> <p>depth 6</p>	
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TEST PIT LOG			MBerm-15WS	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/16/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	WIDELY GRADED SAND (SP); ~85% sand, ~10% subrounded gravel up to 2", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.3ppm. Sample collected: MBerm-15E(5-6) at 0740. ppm = parts per million.	Pit Dimensions (ft)		
	length	5	
	width	6	
	depth	6	


TEST PIT LOG			MBerm-11W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saldas	Date	7/31/2019
Weather	80's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6	WIDELY GRADED SAND (SW); ~80% sand, ~15% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, metal fragments, roots, loosely packed FILL.
6.0			

Notes: Jar headspace readings not available due to malfunctioning PID. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-11W(5-6) at 1210. PID = photo-ionization detector	Pit Dimensions (ft)		
	length	8	
	width	3.5	
	depth	6	


TEST PIT LOG			MBerm-12E	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/16/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	(0-2'): NARROWLY SAND WITH GRAVEL (SP); ~90% fine sand, ~5% subrounded and subangular gravel up to 1", ~5% silt, light brown, roots. (2-6'): WIDELY GRADED SAND WITH GRAVEL(SW); ~75% sand, ~20% subrounded and subangular gravel up to 2", ~5% silt, red-brown, brick fragments, glass fragments, metal fragments, FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headdress reading for test pit: 0.0 ppm Sample collected: MBerm-12E(5-6) at 0805 ppm = parts per million.	Pit Dimensions (ft)	
	length 7	
width 3.5		
	depth 6	


TEST PIT LOG				MBerm-12W	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	180241
Operator	Justin Stevens	GEI Rep	C. Saldas	Date	8/1/2019
Weather	80's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	NARROWLY GRADED SAND (SP); ~80% medium/fine sand, ~15% subrounded gravel up to 4.5", ~5% silt, light brown, plastic fragments, wood fragments, roots, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 0.5ppm. Test pit backfilled with excavated soil upon completion. Samples collected: FD-06 at 1201 and MBerm-13W(5-6) at 1110. ppm = parts per million.	Pit Dimensions (ft)		
	length	7	
	width	3.5	
	depth	6	


TEST PIT LOG			MBerm-13E		
Project	Former Tombarello		PG.	1	OF 1
City/Town	Lawrence, Massachusetts		Location		
Client	City of Lawrence		Ground El.		
Contractor	Northern Drill Services, Inc.		Datum		
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441	
Operator	Justin Stevens	GEI Rep C. Saledas	Date	9/16/2019	
Weather	70's, Sunny				

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	(0-2'): NARROWLY SAND WITH GRAVEL (SP); ~90% fine sand, ~5% subrounded and subangular gravel up to 1", ~5% silt, light brown, roots. (2-6'): WIDELY GRADED SAND WITH GRAVEL(SW); ~75% sand, ~20% subrounded and subangular gravel up to 2", ~5% silt, red-brown, brick fragments, glass fragments, metal fragments, FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.0 ppm Sample collected: MBerm-13E(5-6) at 0830 ppm = parts per million.	Pit Dimensions (ft) length 7 width 4 depth 6	


TEST PIT LOG			MBerm-13W(5-6)	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0			
2.0			
3.0			
4.0			
5.0			
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Brown and dry. Brick and concrete fragments. Loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 1.5 ppm Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-13W(5-6) at 1235</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3</u></p> <p>width <u>3</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG			MBerm-15E
Project	<u>Former Tombarello</u>		PG. <u>1</u> OF <u>1</u> Location _____ _____ Ground El. _____ Datum _____ GEI Proj. No. 1802441 Date <u>9/13/2019</u>
City/Town	<u>Lawrence, Massachusetts</u>		
Client	<u>City of Lawrence</u>		
Contractor	<u>Northern Drill Services, Inc.</u>		
Equipment/Reach	<u>TB290 Excavator</u>		
Operator	<u>Justin Stevens</u>	GEI Rep <u>C. Saldas</u>	
Weather	<u>70's, Sunny</u>		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	NARROWLY GRADED SAND (SP); ~85% sand, ~10% subrounded gravel up to 2", ~5% silt, light brown to brown, bricks, glass fragments, roots, rubber tubing, tile fragments, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.2ppm.</p> <p>Sample collected: MBerm-15E(5-6) at 1030.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft) length <u>7</u> width <u>4</u> depth <u>6</u>	
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TEST PIT LOG			MBerm-15W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	
Weather	80's, Sunny		Date	8/2/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 4", ~5% silt, brown, glass fragments, metal fragments, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 3.2ppm.
 Test pit backfilled with excavated soil upon completion.
 Sample collected: MBerm-15W(5-6) at 0810.


ppm = parts per million.

Pit Dimensions (ft)	
length	6.5
width	4
depth	6




TEST PIT LOG		MBerm-15WN
Project	<u>Former Tombarello</u>	PG. <u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>	Location _____
Client	<u>City of Lawrence</u>	_____
Contractor	<u>Northern Drill Services, Inc.</u>	Ground El. _____
Equipment/Reach	<u>TB290 Excavator</u>	Datum _____
Operator	<u>Justin Stevens</u> GEI Rep <u>C. Saldas</u>	GEI Proj. No. <u>1802441</u>
Weather	<u>70's, Sunny</u>	Date <u>9/11/2019</u>

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% medium-fine sand, ~15% subrounded gravel up to 2", ~5% silt, light-brown to brown, fiberglass-like shards, glass fragments, styrafoam pieces, FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 3.2ppm.</p> <p>Sample collected: MBerm-15WN(5-6) at 1310.</p> <p>ppm = parts per million.</p>	<table border="1"> <thead> <tr> <th colspan="2">Pit Dimensions (ft)</th> </tr> </thead> <tbody> <tr> <td>length</td> <td style="text-align: center;"><u>6</u></td> </tr> <tr> <td>width</td> <td style="text-align: center;"><u>4</u></td> </tr> <tr> <td>depth</td> <td style="text-align: center;"><u>6</u></td> </tr> </tbody> </table>	Pit Dimensions (ft)		length	<u>6</u>	width	<u>4</u>	depth	<u>6</u>	
Pit Dimensions (ft)										
length	<u>6</u>									
width	<u>4</u>									
depth	<u>6</u>									


TEST PIT LOG			MBerm-15WS	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	9/11/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	WIDELY GRADED SAND WITH GRAVEL (SP); ~75% sand, ~20% subrounded gravel up to 2", ~5% silt, brown, brick fragments, clay pipe pieces, glass fragments, metal fragments, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.5ppm. Sample collected: MBerm-15WS(5-6) at 1345. ppm = parts per million.	Pit Dimensions (ft)		
	length	6.5	
	width	4	
	depth	6	


TEST PIT LOG		MBerm-16E
Project	Former Tombarello	PG. <u>1</u> OF <u>1</u>
City/Town	Lawrence, Massachusetts	Location _____
Client	City of Lawrence	_____
Contractor	Northern Drill Services, Inc.	Ground El. _____
Equipment/Reach	TB290 Excavator	Datum _____
Operator	Justin Stevens GEI Rep C. Saldas	GEI Proj. No. 1802441
Weather	70's, Sunny	Date <u>9/13/2019</u>

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% fine sand, ~15% subrounded gravel up to 2", ~5% silt, brown to light-brown, concrete pieces, glass fragments, metal fragments, roots, tile pieces, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading for test pit: 0.3ppm.</p> <p>Sample collected: MBerm-16E(5-6) at 0950.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>6</u></p> <p>width <u>3.5</u></p> <p>depth <u>6</u></p>	
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TEST PIT LOG			MBerm-15W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/2/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium/fine sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 3.2ppm. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-16W(5-6) at 1010. ppm = parts per million.	Pit Dimensions (ft) length 6.5 width 4 depth 6	

TEST PIT LOG			MBerm-17E	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saldas	Date	9/13/2019
Weather	70's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, clay pieces, concrete fragments, plastic fragments, loosely packed FILL.
			Test pit competed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.3ppm. Sample collected: MBerm-17E(5-6) at 0915. ppm = parts per million.	Pit Dimensions (ft) length 5 width 4 depth 6	

TEST PIT LOG			MBerm-17W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date
Weather	80's, Sunny		8/5/2019	

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~55% fine to medium sand, ~40% subangular gravel up to 4", ~5% silt, brown, brick fragments, concrete fragments, glass fragments, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 0.2ppm.
 Test pit backfilled with excavated soil upon completion.
 Sample collected: MBerm-17W(5-6) at 1205.


ppm = parts per million.

Pit Dimensions (ft)	
length	3
width	3
depth	6




TEST PIT LOG				MBerm-18E	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	_____
Client	City of Lawrence			Ground El.	_____
Contractor	Northern Drill Services, Inc.			Datum	_____
Equipment/Reach	TB290 Excavator			GEI Proj. No.	180241
Operator	Justin Stevens	GEI Rep	C. Saldas	Date	9/13/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6'	NARROWLY GRADED SAND (SP); ~75% fine sand, ~20% subrounded and subangular gravel up to 1", ~5% silt, brown, glass fragments, roots, loosely packed FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

Notes: Jar headspace reading for test pit: 0.2ppm. Samples collected: MBerm-18E(5-6) at 0830. ppm = parts per million.	Pit Dimensions (ft)		
	length	4	
	width	4	
	depth	6	


TEST PIT LOG			MBerm-18W	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	180241
Operator	Justin Stevens	GEI Rep	C. Saldas	Date
Weather	80's, Sunny			8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		5-6'	WIDELY GRADED SAND (SW); ~75% fine to medium sand, ~20% subangular gravel up to 2", ~5% silt, brown, fine white powder, ash, glass fragments, metal fragments, wood fragments, roots, loosely packed FILL.
6.0			

Notes: Jar headspace reading for test pit: 0.4ppm. Test pit backfilled with excavated soil upon completion. Samples collected: MBerm-18W(5-6) at 1100. ppm = parts per million.	Pit Dimensions (ft) length 3 width 3 depth 6	


TEST PIT LOG		MBerm-19E	
Project	<u>Former Tombarello</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>	Location	<u></u>
Client	<u>City of Lawrence</u>	Ground El.	<u></u>
Contractor	<u>Northern Drill Services, Inc.</u>	Datum	<u></u>
Equipment/Reach	<u>TB290 Excavator</u>	GEI Proj. No.	<u>1802441</u>
Operator	<u>Justin Stevens</u> GEI Rep <u>C. Saldas</u>	Date	<u>9/13/2019</u>
Weather	<u>70's, Sunny</u>		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	NARROWLY GRADED SAND WITH GRAVEL (SP); ~70% medium-fine sand, ~25% subrounded and subangular gravel up to 3", ~5% silt, light brown, concrete pieces, glass fragments, roots, FILL.
			Test pit completed to 6 feet and backfilled with excavated soil.

<p>Notes: Jar headspace reading in test pit: 0.5ppm.</p> <p>Samples collected: MBerm-19E(5-6) at 0800, EB-12 at 0805, and FD-22 at 1201.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft) length <u>5</u> width <u>4</u> depth <u>6</u>		

TEST PIT LOG				MBerm-19W	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date	8/5/2019
Weather	80's, Sunny				

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~60% fine to medium sand, ~35% subangular gravel up to 3", ~5% silt, brown, glass fragments, plastic fragments, roots, moist, loosely packed FILL.

<p>Notes: Jar headspace reading in test pit: 1.3ppm. Test pit backfilled with excavated soil upon completion. Sample collected: MBerm-18W(5-6) at 1040.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft) length 3 width 2 depth 6	
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BORING INFORMATION

LOCATION: At crest of southern berm , west end
 GROUND SURFACE EL. (ft): NA DATE START/END: 7/31/2019 - 7/31/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-01

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	410 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick and glass fragments.
	5					379 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 * Possible PID malfunction. TBerm-01(0-1) @ 0740, TBerm-01(3-4) @ 0745.

PROJECT NAME: Former Tombarello Site
 CITY/STATE: Lawrence, Massachusetts
 GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: At crest of southern berm
 GROUND SURFACE EL. (ft): NA DATE START/END: 7/31/2019 - 7/31/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-02

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	150 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, and styrofoam fragments.
	5					1891 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 * Possible PID malfunction. TBerm-02(0-1) @ 0755, TBerm-02 (3-4) @ 0800.

PROJECT NAME: Former Tombarello Site
 CITY/STATE: Lawrence, Massachusetts
 GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	TBerm-03
GROUND SURFACE EL. (ft): <u>NA</u>	
DATE START/END: <u>7/31/2019 - 7/31/2019</u>	
VERTICAL DATUM: <u>NA</u>	
DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>4.0</u>	PAGE 1 of 1
DRILLER NAME: <u>Zach, Tyler</u>	
RIG TYPE: <u>Jackhammer</u>	
LOGGED BY: <u>B.Lee</u>	

DRILLING INFORMATION			
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>	
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>	
DRILLING METHOD: <u>Hand Geoprobe</u>			
WATER LEVEL DEPTHS (ft): <u>Not measured</u>			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	849 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, and wood fragments.
	5					4048 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: * Possible PID malfunction. TBerm-03(0-1) @ 0820, TBerm-03(3-4) @ 0840.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-L-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>7/31/2019 - 7/31/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>Zach, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-04
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>	
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>	
DRILLING METHOD: <u>Hand Geoprobe</u>			
WATER LEVEL DEPTHS (ft): <u>Not measured</u>			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	501 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, plastic, coal, and wood fragments.
	5					478 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: * Possible PID malfunction. FD-02(0-1) @ 0910, TBerm-04(0-1) @ 0915, TBerm-04(3-4) @ 0955.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>7/31/2019 - 7/31/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>Zach, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-05
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	61 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, and wood fragments.
	5					821 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: * Possible PID malfunction. TBerm-05(0-1) @ 1000, TBerm-05(3-4) @ 1015).	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>7/31/2019 - 7/31/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>Zach, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-06
	PAGE 1 of 1

DRILLING INFORMATION			
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>	
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>	
DRILLING METHOD: <u>Hand Geoprobe</u>			
WATER LEVEL DEPTHS (ft): <u>Not measured</u>			

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	306 ppm*	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, glass, and wood fragments.
	5					1688 ppm*		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: * Possible PID malfunction. TBerm-06(0-1) @ 1040, TBerm-06(3-4) @ 1100.	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>John, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-07
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	9.4 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); Poorly graded sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Plastic, metal, and wood fragments.
	5					2.3 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-07(0-1) @ 0815, TBerm-07(3-4) @ 0820	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION	BORING
LOCATION: <u>At crest of southern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>John, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-08
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	10.1 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, charcoal, and wood fragments.
	5					4.9 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-08(0-1) @ 0800, TBerm-08(3-4) @ 0805	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION LOCATION: <u>At crest of eastern berm, south end</u> GROUND SURFACE EL. (ft): <u>NA</u> DATE START/END: <u>8/1/2019 - 8/1/2019</u> VERTICAL DATUM: <u>NA</u> DRILLING COMPANY: <u>Northern Drill Service, Inc.</u> TOTAL DEPTH (ft): <u>4.0</u> DRILLER NAME: <u>John, Tyler</u> LOGGED BY: <u>B.Lee</u> RIG TYPE: <u>Jackhammer</u>	BORING TBerm-10 PAGE 1 of 1
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DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D.: <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	7.0 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, charcoal, and wood fragments.
	5					9.0 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-10(0-1) @ 0845, TBerm-10(3-4)	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: At crest of eastern berm
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/1/2019 - 8/1/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: John, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-11
 PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	2.4 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-1.5") 5% fines. Brown, dry and loose. Brick, charcoal, and wood fragments.
	5					5.4 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 TBerm-11(0-1) @ 0910, TBerm-11(3-4) @ 0915

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



BORING INFORMATION

LOCATION: At crest of eastern berm
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/1/2019 - 8/1/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: John, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-12

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.0 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5") 5% fines. Brown, dry and loose. Brick and charcoal fragments.
	5					0.0 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 TBerm-12(0-1) @ 1025, TBerm-12(3-4) @ 1030

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of eastern berm</u>	TBerm-13
GROUND SURFACE EL. (ft): <u>NA</u>	
DATE START/END: <u>8/1/2019 - 8/1/2019</u>	
VERTICAL DATUM: <u>NA</u>	
DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
TOTAL DEPTH (ft): <u>4.0</u>	PAGE 1 of 1
DRILLER NAME: <u>John, Tyler</u>	
LOGGED BY: <u>B.Lee</u>	
RIG TYPE: <u>Jackhammer</u>	

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.1 ppm	FILL	S1: (0-2.4"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5") 5% fines. Dark brown, dry and loose. Brick and asphalt fragments. S1: (2.4-48"): NARROWLY GRADED SAND WITH GRAVEL (SP); 75% sand with 20% subangular gravel (0-0.5") 5% fines. Light brown, dry and loose. Brick and asphalt fragments.
	5					0.0 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-13(0-1) @ 1035, TBerm-13(3-4) @ 1040	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-LOC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION	BORING
LOCATION: <u>At crest of eastern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>John, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-14
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.0 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5") 5% fines. Brown, dry and loose. Brick, plastic, and charcoal fragments.
	5					0.0 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-14(0-1) @ 1045, TBerm-14(3-4) @ 1050	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION	BORING
LOCATION: <u>At crest of eastern berm</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DATE START/END: <u>8/1/2019 - 8/1/2019</u>
VERTICAL DATUM: <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>
TOTAL DEPTH (ft): <u>4.0</u>	DRILLER NAME: <u>John, Tyler</u>
LOGGED BY: <u>B.Lee</u>	RIG TYPE: <u>Jackhammer</u>
	TBerm-15
	PAGE 1 of 1

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter
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NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling
30 inches to drive a 2-inch-O.D.
split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.5 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5") 5% fines. Brown, dry and loose. Brick and charcoal fragments.
	5					1.5 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-15(0-1) @ 1115, FD-08(0-1), TBerm-15(3-4) @ 1120	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20



BORING INFORMATION

LOCATION: At crest of eastern berm
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/5/2019 - 8/5/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-16

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.0 ppm	SAND	S1: (0-30"): NARROWLY GRADED SAND WITH SILT (SP-SM); 85% sand with 10% fines, 5% subrounded gravel (0-0.25"). Light tan, dry, and loose.
						3-4ft = 0.0 ppm	FILL	S1: (30-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Brown, loose and dry. Brick and glass fragments.
	5							Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 TBerm-16(0-1) @ 1155, TBerm-16(3-4) @ 1200

PROJECT NAME: Former Tombarello Site
 CITY/STATE: Lawrence, Massachusetts
 GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION		BORING TBerm-17 PAGE 1 of 1
LOCATION: <u>At crest of eastern berm</u>	DATE START/END: <u>8/5/2019 - 8/5/2019</u>	
GROUND SURFACE EL. (ft): <u>NA</u>	DRILLING COMPANY: <u>Northern Drill Service, Inc.</u>	
VERTICAL DATUM: <u>NA</u>	DRILLER NAME: <u>Zach, Tyler</u>	
TOTAL DEPTH (ft): <u>4.0</u>	RIG TYPE: <u>Jackhammer</u>	
LOGGED BY: <u>B.Lee</u>		

DRILLING INFORMATION		
HAMMER TYPE: <u>Automatic</u>	CASING I.D./O.D.: <u>2.125 inch/ 2.25 inch</u>	CORE BARREL TYPE: <u>Macrocore</u>
AUGER I.D./O.D.: <u>NA / NA</u>	DRILL ROD O.D.: <u>NM</u>	CORE BARREL I.D./O.D. <u>NA / NA</u>
DRILLING METHOD: <u>Hand Geoprobe</u>		
WATER LEVEL DEPTHS (ft): <u>Not measured</u>		

ABBREVIATIONS:

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.0 ppm	SAND	S1: (0-30"): NARROWLY GRADED SAND WITH SILT (SP-SM); 85% sand with 10% fines, 5% subrounded gravel (0-0.25"). Light tan, dry, and loose.
							FILL	S1: (30-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 75% sand with 20% subangular gravel (0-0.5"), 5% fines. Brown, loose and dry. Brick and glass fragments.
	5					0.1 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES: TBerm-17(0-1) @ 1145, TBerm(3-4) @ 1150	PROJECT NAME: Former Tombarello Site CITY/STATE: Lawrence, Massachusetts GEI PROJECT NUMBER: 1802441
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GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: At crest of eastern berm
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/5/2019 - 8/5/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING
TBerm-18

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.1 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 80% sand with 15% subangular gravel (0-0.5"), 5% fines. Brown, loose and dry. Brick, charcoal, and glass fragments.
	5					0.1 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 TBerm-18(0-1) @ 1135, TBerm-18(3-4) @ 1140

PROJECT NAME: Former Tombarello Site
CITY/STATE: Lawrence, Massachusetts
GEI PROJECT NUMBER: 1802441



GEI WOBURN STD 1-1-OC-LYR NAME-GWDEPTH BORING LOGS 2019.GPJ 2/11/20

BORING INFORMATION

LOCATION: At crest of eastern berm, north end.
 GROUND SURFACE EL. (ft): NA DATE START/END: 8/5/2019 - 8/5/2019
 VERTICAL DATUM: NA DRILLING COMPANY: Northern Drill Service, Inc.
 TOTAL DEPTH (ft): 4.0 DRILLER NAME: Zach, Tyler
 LOGGED BY: B.Lee RIG TYPE: Jackhammer

BORING**TBerm-19**

PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic CASING I.D./O.D.: 2.125 inch/ 2.25 inch CORE BARREL TYPE: Macrocore
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D. NA / NA
 DRILLING METHOD: Hand Geoprobe
 WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0 to 4	48/NM	NA	0.9 ppm	FILL	S1: (0-48"): WIDELY GRADED SAND WITH GRAVEL (SW); 80% sand with 15% subangular gravel (0-0.5"), 5% fines. Brown, loose and dry. Brick, charcoal, and glass fragments.
	5					0.7 ppm		Bottom of boring at depth 4 ft.
	10							
	15							
	20							

NOTES:
 TBerm-19(0-1) @ 1100, TBerm(3-4) @ 1105

PROJECT NAME: Former Tombarello Site


CITY/STATE: Lawrence, Massachusetts

GEI PROJECT NUMBER: 1802441




TEST PIT LOG			SP01-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep	C. Saledas	GEI Proj. No. 1802441
Weather	70's, Sunny		Date	8/7/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, plastic fragments, some roots, loosely packed FILL.
5.0			

<p>Notes: Jar headspace reading for test pit: 1.7ppm. Test pit backfilled with excavated soil upon completion. Samples collected: FD-15 at 1203 and SP01-1(4-5) at 0805.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 4</p> <p>width 3.5</p> <p>depth 5</p>	
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TEST PIT LOG		SP01-2	
Project	<u>Former Tombarello</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>	Location	<u></u>
Client	<u>City of Lawrence</u>	Ground El.	<u></u>
Contractor	<u>Northern Drill Services, Inc.</u>	Datum	<u></u>
Equipment/Reach	<u>TB290 Excavator</u>	GEI Proj. No.	<u>1802441</u>
Operator	<u>Justin Stevens</u> GEI Rep <u>C. Saledas</u>	Date	<u>8/7/2019</u>
Weather	<u>70's, Sunny</u>		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, plastic fragments, some roots, loosely packed FILL.
4.0			

Notes: Jar headspace reading for test pit: 0.6ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP01-2(3-4) at 0825. ppm = parts per million.	Pit Dimensions (ft) length <u>4</u> width <u>3.5</u> depth <u>4</u>	

TEST PIT LOG

SP03-1

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saledas
Weather 80's, Sunny

PG. 1 **OF** 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, light brown, metal fragments, plastic fragments, some roots, loosely packed FILL.
4.0			


Notes: Headspace reading for test pit: 2.7ppm.
Test pit backfilled with excavated soil upon completion.
Sample collected: SP03-1(3-4) at 1255.

Pit Dimensions (ft)	
length	<u>3.5</u>
width	<u>3.5</u>
depth	<u>4</u>



TEST PIT LOG				SP03-2	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date	8/2/2019
Weather	80's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, light brown, metal fragments, plastic fragments, some roots, loosely packed FILL.
5.0			

Notes: Headspace reading for test pit: 3.6ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP03-2(4-5) at 1310.	Pit Dimensions (ft)		
	length	4	
	width	3.5	
	depth	5	

TEST PIT LOG

SP03-3

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saldas
Weather 80's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. **1802441**
Date 8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, light brown, metal fragments, plastic fragments, some roots, loosely packed FILL.
3.0			


Notes: Headspace reading for test pit: 4.9ppm.
Test pit backfilled with excavated soil upon completion.
Sample collected: SP03-3(2-3) at 1325.

Pit Dimensions (ft)
length 4
width 3.5
depth 3




TEST PIT LOG			SP04-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saldas	Date
Weather	70's, Sunny		8/2/2019	

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, loosely packed FILL.
4.0			

Notes: Jar headspace reading for test pit: 0.2ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP04-1(3-4) at 1340. ppm = parts per million.	Pit Dimensions (ft)		
	length	4	
	width	4	
	depth	4	


TEST PIT LOG		SP04-2	
Project	Former Tombarello	PG.	1 OF 1
City/Town	Lawrence, Massachusetts	Location	
Client	City of Lawrence	Ground El.	
Contractor	Northern Drill Services, Inc.	Datum	
Equipment/Reach	TB290 Excavator	GEI Proj. No.	1802441
Operator	Justin Stevens GEI Rep C. Saldas	Date	8/2/2019
Weather	70's, Sunny		

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, loosely packed FILL.
5.0			

<p>Notes: Jar headspace reading for test pit: 0.6ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP04-2(4-5) at 1355.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 5</p> <p>width 3.5</p> <p>depth 5</p>	
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TEST PIT LOG			SP04-3	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep C. Saledas	Date	8/2/2019
Weather	70's, Sunny			

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% medium sand, ~20% subrounded and subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, loosely packed FILL.
3.0			

Notes: Jar headspace reading for test pit: 0.0ppm. Test pit backfilled with excavated soil upon completion. Samples collected: SP04-3(2-3) at 1410. ppm = parts per million.	Pit Dimensions (ft)	
	length	
width	3.5	
	depth	3


TEST PIT LOG				SP05-1	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	C. Saldas	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	NARROWLY GRADED SAND (SP); ~85% medium sand, ~10% subrounded up to 3", ~5% silt, brown, glass fragments, loosely packed FILL.
3.0			

<p>Notes: Jar headspace reading for test pit: 0.8ppm. Test pit backfilled with excavated soil upon completion. Samples collected: SP05-1(2-3) at 1410.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft)		
	length	3.5	
	width	3.5	
	depth	3	


TEST PIT LOG			SP05-2	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	NARROWLY GRADED SAND (SP); ~85% medium sand, ~10% subrounded up to 3", ~5% silt, brown, glass fragments, loosely packed FILL.
4.0			

Notes: Jar headspace reading for test pit: 1.8ppm. Test pit backfilled with excavated soil upon completion. Samples collected: FD-10 at 1158 and SP05-2(3-4) at 1155. ppm = parts per million.	Pit Dimensions (ft) length 3.5 width 3.5 depth 4	


TEST PIT LOG			SP05-3	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	C. Saledas	Date
Weather	70's, Sunny			8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		1-2'	NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% fine sand, ~15% subrounded gravel up to 0.75", ~5% silt, brown, glass fragments, loosely packed FILL.
2.0			

Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP05-3(1-2) at 1210. ppm = parts per million.	Pit Dimensions (ft) length 3.5 width 3.5 depth 2	


TEST PIT LOG			SP06-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.
4.0			

Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP06-1(3-4) at 1130. ppm = parts per million.	Pit Dimensions (ft) length 4 width 4 depth 4	

TEST PIT LOG			SP06-2	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep C. Saledas	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, glass fragments, loosely packed FILL.
5.0			

Notes: Jar headspace reading for test pit: 2.3ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP06-2(4-5) at 1110. ppm = parts per million.	Pit Dimensions (ft) length 5 width 3.5 depth 5	

TEST PIT LOG

SP06-3

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** C. Saledas
Weather 70's, Sunny

PG. 1 **OF** 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 8/2/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
2-3'		2-3'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, ~25% subrounded and subangular gravel up to 4", ~5% silt, brown, brick fragments, glass fragments, loosely packed FILL.
3.0			

Notes: Jar headspace reading for test pit: 4.8ppm.
 Test pit backfilled with excavated soil upon completion.
 Samples collected: SP04-3(2-3) at 1230.

 ppm = parts per million.


Pit Dimensions (ft)

length	<u>4</u>
width	<u>3.5</u>
depth	<u>3</u>




TEST PIT LOG			SP07-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep S. Trant	GEI Proj. No.	1802441
Weather	70's, Sunny		Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED GRAVEL WITH SAND (GW); ~65% subrounded and subangular gravel up to 4", ~30% fine to medium sand, ~5% silt, brown, glass fragments, metal fragments, plastic fragments, loosely packed FILL.
5.0			

Notes: Jar headspace reading for test pit: 1.6ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP07-1(4-5) at 1355. ppm = parts per million.	Pit Dimensions (ft)		
	length	3	
	width	2	
	depth	5	


TEST PIT LOG			SP07-2	
Project	<u>Former Tombarello</u>		PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Lawrence, Massachusetts</u>		Location	<u></u>
Client	<u>City of Lawrence</u>		Ground El.	<u></u>
Contractor	<u>Northern Drill Services, Inc.</u>		Datum	<u></u>
Equipment/Reach	<u>TB290 Excavator</u>		GEI Proj. No.	<u>1802441</u>
Operator	<u>Justin Stevens</u>	GEI Rep	<u>S. Trant</u>	Date
Weather	<u>70's, Sunny</u>		<u>8/5/2019</u>	

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
3.0		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to medium sand, ~30% subrounded and subangular gravel up to 4", ~5% silt, brown, glass fragments, metal fragments, plastic fragments, loosely packed FILL.
4.0			

Notes: Jar headspace reading for test pit: 1.5ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP07-2(3-4) at 1340. ppm = parts per million.	Pit Dimensions (ft)	
	length <u>3</u>	
width <u>2</u>		
	depth <u>4</u>	


TEST PIT LOG				SP07-3	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	S. Trant	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	WIDELY GRADED GRAVEL WITH SAND (GW); ~65% subrounded and subangular gravel up to 4", ~30% fine to medium sand, ~5% silt, brown, glass fragments, metal fragments, plastic fragments, loosely packed FILL.
3.0			

Notes: Jar headspace reading for test pit: 1.7ppm. Test pit backfilled with excavated soil upon completion. Samples collected: FD-13 at 1202, SP07-3(2-3) at 1415. ppm = parts per million.	Pit Dimensions (ft) length 3 width 2 depth 3	


TEST PIT LOG			SP08-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	
Weather	70's, Sunny		Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
3.0		2-3'	WIDELY GRADED SAND WITH GRAVEL (SW); ~55% fine to medium sand, ~40% subangular gravel up to 4", ~5% silt, brown, brick fragments, concrete pieces, glass fragments, metal fragments, platics, roots, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Samples collected: SP08-1(2-3) at 0940.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">length</td><td style="text-align: right; border-bottom: 1px solid black;">3</td></tr> <tr><td style="padding: 2px;">width</td><td style="text-align: right; border-bottom: 1px solid black;">2</td></tr> <tr><td style="padding: 2px;">depth</td><td style="text-align: right; border-bottom: 1px solid black;">3</td></tr> </table>	length	3	width	2	depth	3	
length	3							
width	2							
depth	3							


TEST PIT LOG			SP09-2	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	_____
Client	City of Lawrence		Ground El.	_____
Contractor	Northern Drill Services, Inc.		Datum	_____
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	
Weather	70's, Sunny		Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
4.0		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% medium to fine sand, ~25% subrounded 3", ~5% silt, brown, brick fragments, glass fragments, metal fagments, loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP08-2(3-4) at 0925.</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length 3</p> <p>width 2</p> <p>depth 4</p>	
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TEST PIT LOG				SP09-3	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	S. Trant	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to medium sand, ~25% subangular gravel up to 3", ~5% silt, brown, glass fragments, metal fragments, plastic fragments, roots, loosely packed FILL.
5.0			

Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP08-3(4-5) at 0910. ppm = parts per million.	Pit Dimensions (ft) length 3 width 2 depth 5	

TEST PIT LOG				SP09-1	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	S. Trant	GEI Proj. No.	1802441
Weather	70's, Sunny			Date	8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to medium sand, ~30% subangular gravel up to 4", ~5% silt, brown, glass fragments, roots, loosely packed FILL.
3.0			

<p>Notes: Jar headspace reading for test pit: 0.0ppm. Test pit backfilled with excavated soil upon completion. Samples collected: SP09-1(2-3) at 0815.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft)		
	length	3	
	width	2	
	depth	3	

TEST PIT LOG

SP09-2

Project Former Tombarello
City/Town Lawrence, Massachusetts
Client City of Lawrence
Contractor Northern Drill Services, Inc.
Equipment/Reach TB290 Excavator
Operator Justin Stevens **GEI Rep** S. Trant
Weather 70's, Sunny

PG. 1 OF 1
Location _____
Ground El. _____
Datum _____
GEI Proj. No. 1802441
Date 8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
4.0		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to fine sand, ~15% subrounded 1", ~5% silt, brown, clinkers, glass fragments, loosely packed FILL.

Notes: Jar headspace reading for test pit: 0.0ppm.
 Test pit backfilled with excavated soil upon completion.
 Sample collected: SP09-2(3-4) at 0800.


 ppm = parts per million.

Pit Dimensions (ft)	
length	<u>3</u>
width	<u>2</u>
depth	<u>4</u>




TEST PIT LOG			SP09-3	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	Date
Weather	70's, Sunny			8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium sand, ~15% subrounded gravel up to 1", ~5% silt, brown, glass fragments, roots, loosely packed FILL.
5.0			

Notes: Jar headspace reading for test pit: 0.3ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP09-3(4-5) at 0745. ppm = parts per million.	Pit Dimensions (ft)		
	length	3	
	width	2	
	depth	5	


TEST PIT LOG			SP10-1	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence		Ground El.	
Contractor	Northern Drill Services, Inc.		Datum	
Equipment/Reach	TB290 Excavator		GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	Date
Weather	70's, Sunny			8/5/2019

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		2-3'	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to medium sand, ~30% subangular gravel up to 3", ~5% silt, brown, brick fragments, glass fragments, metal fragments, plastics, roots, loosely packed FILL.
3.0			

<p>Notes: Jar headspace reading for test pit: 0.1ppm. Test pit backfilled with excavated soil upon completion. Samples collected: SP10-1(2-3) at 0850.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft) length <u>3</u> width <u>2</u> depth <u>3</u>		


TEST PIT LOG				SP10-2	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	Date	8/5/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		3-4'	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% medium to fine sand, ~30% subrounded 3", ~5% silt, brown, brick fragments, glass fragments, metal fagments, loosely packed FILL.
4.0			

<p>Notes: Jar headspace reading for test pit: 0.0ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP10-2(3-4) at 0835.</p> <p>ppm = parts per million.</p>	Pit Dimensions (ft)		
	length	3	
	width	2	
	depth	4	


TEST PIT LOG				SP10-3	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence			Ground El.	
Contractor	Northern Drill Services, Inc.			Datum	
Equipment/Reach	TB290 Excavator			GEI Proj. No.	1802441
Operator	Justin Stevens	GEI Rep	S. Trant	Date	8/5/2019
Weather	70's, Sunny				

Depth (ft)	Sample No. and Type	Sample Depth (ft)	Soil Description
		4-5'	WIDELY GRADED SAND WITH GRAVEL (SW); ~65% fine to medium sand, ~30% subangular gravel up to 4", ~5% silt, brown, brick fragments, glass fragments, metal fragments, loosely packed FILL.
5.0			

Notes: Jar headspace reading for test pit: 0.2ppm. Test pit backfilled with excavated soil upon completion. Sample collected: SP10-3(4-5) at 0820. ppm = parts per million.	Pit Dimensions (ft) length 3 width 2 depth 5	


TEST PIT LOG				SP10-04	
Project	Former Tombarello			PG.	1 OF 1
City/Town	Lawrence, Massachusetts			Location	
Client	City of Lawrence				
Contractor	Northern Drill Services, Inc.			Ground El.	
Equipment/Reach	TB290 Excavator			Datum	
Operator	Justin Stevens	GEI Rep	B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny			Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0			
2.0			
3.0		2-3	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Brown and dry. Brick, plastic, wood, and metal fragments. Loosely packed FILL.

Notes: Jar headspace reading for test pit: 1.5 ppm Test pit backfilled with excavated soil upon completion. Sample collected: SP10-04(2-3) at 1225 ppm = parts per million.	Pit Dimensions (ft)	
	length 3 width 3 depth 3	


TEST PIT LOG			SP10-05	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0			
2.0			
3.0			
4.0		3-4	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Brown and dry. Brick, plastic, wood, and metal fragments. Loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 2.2 ppm Test pit backfilled with excavated soil upon completion. Sample collected: SP10-05(3-4) at 1215</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3</u></p> <p>width <u>3</u></p> <p>depth <u>4</u></p>	
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TEST PIT LOG			SP10-06	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0			
2.0			
3.0			
4.0			
5.0		4-5	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, ~20% subrounded and subangular gravel up to 3", ~5% silt. Brown and dry. Metal, plastic, and wood fragments. Loosely packed FILL.

<p>Notes: Jar headspace reading for test pit: 1.3 ppm Test pit backfilled with excavated soil upon completion. Sample collected SP10-06(4-5) at 1210</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3</u></p> <p>width <u>3</u></p> <p>depth <u>5</u></p>	
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TEST PIT LOG			SP10-07	
Project	Former Tombarello		PG.	1 OF 1
City/Town	Lawrence, Massachusetts		Location	
Client	City of Lawrence			
Contractor	Northern Drill Services, Inc.		Ground El.	
Equipment/Reach	TB290 Excavator		Datum	
Operator	Justin Stevens	GEI Rep B.Lee	GEI Proj. No.	1802441
Weather	80's, Sunny		Date	8/1/2019

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1.0			
2.0			
3.0			
4.0			
5.0			
6.0		5-6	WIDELY GRADED SAND WITH GRAVEL (SW); ~75% Sand, ~20% subangular gravel, ~ 5% fines. Brown and dry. Brick, concrete, and glass fragments. Loosely packed. FILL.
7.0			
8.0			

<p>Notes: Jar headspace reading for test pit: 0.1 ppm Test pit backfilled with excavated soil upon completion. Sample collected: SP10-07(5-6) at 1155</p> <p>ppm = parts per million.</p>	<p>Pit Dimensions (ft)</p> <p>length <u>3</u></p> <p>width <u>3</u></p> <p>depth <u>6</u></p>	
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